MEDICAL SCIENCE

Burnout syndrome among forensic physicians in Saudi Arabia

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ABSTRACT

Background/purpose: Working in a forensic medicine setting imposes a significant psychological burden on the employees due to work duties of devastating and unpredictable nature. The work nature puts forensic practitioners at substantial risk of developing burnout. This study investigated the extent of occupational burnout among forensic medicine physicians in Saudi Arabia and the different coping methods implemented. *Methods:* An observational cross-sectional study using a self-administered questionnaire was conducted on Saudi forensic medicine physicians across different centers. The questionnaire was divided into four sections: demographics, work characteristics, Oldenburg Burnout Inventory, and the brief-COPE Inventory. *Results:* 56.1% of participants experienced high burnout levels, whereas 26.3% and 17.5% scored medium and low levels of burnout, respectively. The increased number of cases acquired weekly and working hours per day were strong predictors of high burnout levels. The first choice to be considered by many forensic experts regarding coping with the number of stressful stimuli was taking a vacation. *Conclusion:* The study found a high prevalence of burnout among Saudi forensic practitioners, of which the majority exhibited high levels of burnout. The number of cases reflected a considerable impact on psychological well-being, making them more prone to score higher on burnout measures while having more work experience revealed better-coping abilities with time. Therefore, special efforts should be considered and applied to minimize burnout.

Keywords: forensic medicine, Burnout syndrome, stress, Healthcare, psychological burden

1. INTRODUCTION

Healthcare professionals are vulnerable to increased work stress, such as physical sickness, mental health problems, and burnout (Edwards and Burnard, 2003; Sasidharan and Dhillon, 2021). There is rising concern regarding the health of medical doctors since many of them are prone to burnout, a common outcome of long-term exposure to work stress that manifests as psychological and physical burdens (Shin et al., 2014; Golonka et

al., 2019). Burnout is a work-related stress syndrome, and according to Freudenberger and burnout is characterized by emotional weariness, depersonalization, and a lack of satisfaction with one's accomplishments that negatively affect work performance (Golonka et al., 2019; Freudenberger, 1975; Salvagioni et al., 2017).

An individual's inability to cope leads to burnout and numerous studies have noted that the workplace environment has an effect on burnout as high workload and poor work control favor its development (Golonka et al., 2019; Wong, 2020). Additionally, perfectionism, altruism, and a greater sense of responsibility are characteristics shared by doctors, which may impose a negative attitude on a personal level and lead to increased burnout (Wong, 2020). Burnout progresses in stages, making its symptomatology quite complex (Kaschka et al., 2011). Freudenberger originally outlined burnout as a 12-stage process, but recently a 5-stage burnout development model is accepted. These 5 stages are elation, stagnation, prolonged pressure, burnout and habitual burnout (Kaschka et al., 2011; De-Hert, 2020).

Previous studies found that the workplace atmosphere in forensic medicine is exceptionally stressful (Kirby and Pollock, 2006; Coldwell and Naismith, 1989). Working in a forensic environment as a medical professional is frequently viewed as a demanding, dangerous, and emotionally taxing experience (Kirby and Pollock, 2006; Coldwell and Naismith, 1989). Forensic physicians may have various psychosocial effects, including a lack of empathy for victims if they are exposed to excessive amounts of violence, graphic material, distressing crime scenes, blood, and details of the attack, torture, and murder (Fisher, 1995; Slack, 2020). Therefore, forensic healthcare professionals may be more susceptible to stressful work-related events due to their altered psychological well-being and work environment (Velando-Soriano et al., 2020).

The psychological and physiological features of burnout are significant direct impacts on a person's well-being (Sehsah et al., 2021). Physical effects of burnout include increased risk of cardiovascular disease, type 2 diabetes and mortality. And the most common psychological effects are depression, sleeplessness, and anxiety (Salvagioni et al., 2017; Golonka et al., 2019; Sehsah et al., 2021). Additionally, burnout impacts the workplace and organization by increasing low performance and quality, employee unhappiness, absenteeism, mistakes, and high turnover (Salvagioni et al., 2017; Sehsah et al., 2021). The only factor affecting work performance is the emotional tiredness brought on by burnout. As a result, many researchers used the strategy of concentrating just on one aspect when they were considering the problem (Shoman et al., 2021).

The superb strategy for preventing burnout is to create a program that enhances psychological well-being and resilience, such as cognitive behavioral therapy (Velando-Soriano et al., 2020; Shoman et al., 2021; Clough et al., 2017). Another approach is to use coping mechanisms, particularly adaptive coping, in addition to physical activity that may help to prevent occupational burnout (Shoman et al., 2021). Burnout is strongly associated with cognitive function impairment. Some studies found burnout subjects had poor activation of the brain's functional network, making it difficult to manage negative emotions and maintain good mental health (Golonka et al., 2019).

The number of papers published on burnout has increased over the last ten years, indicating a growing interest in this matter (De-Hert, 2020). To our knowledge, research on burnout among forensics-related subjects is limited in Saudi Arabia. Thus, this study aimed to investigate the extent of occupational burnout and coping methods among forensic medicine physicians in the Kingdom of Saudi Arabia and the factors that influence it.

2. SUBJECTS AND METHODS

Study design, location, and time

An observational cross-sectional study was done in the main forensic medicine centers (Riyadh, Jeddah, Al-Madinah, and Al-Dammam) in the Kingdom of Saudi Arabia in the time from March to July 2022.

Study participants

The inclusion criteria were forensic medicine physicians working in forensic centers and engaged for ≥ one year. And the exclusion criteria were forensic physicians engaged for less than one year and those not engaged in the Ministry of Health-related forensic centers.

Sample size and sampling methodology

The sample was calculated using Raosoft sample size calculator software from the website http://www.raosoft.com/samplesize.html. The estimated required sample size was calculated at a 95% confidence interval with a total population size of 95 participants with a margin of error of ±5% and an assumed prevalence of 50%. The minimum calculated sample size was 77 participants, and

after the exclusion of the non-respondents who refused to share in the study, the total included sample was 57 physicians with a 74% response rate. A non-probability convenience sampling technique was applied to select the sample.

Data collection

A self-administered questionnaire was used and included the 1st section to collect data about demographics, the 2nd section collected data about work characteristics (Job title, forensic center region, work experience in forensic medicine and the number of cases taken each week, and the number of hours worked each day). The 3rd section included the validated Oldenburg Burnout Inventory (OLBI) Demerouti et al., (2001) to assess the level of burnout among our study subjects. The questionnaire included positive and negative statements, and the responses were on a four-point Likert scale (strongly agree, agree, disagree, strongly disagree). It covered two critical aspects of burnout: exhaustion and disengagement from work.

We defined exhaustion as an intensive physical and mental strain that results from prolonged exposure to certain job burdens. Disengagement items concern the employee's relationship with the job and refer to one's distancing from anything work-related. The instrument has 16 statements, including eight disengagement-related and eight exhaustion statements. Statements 1, 5, 7, 10, 13, 14, 15, and 16 scored as such: Strongly agree (1), agree (2), disagree (3), strongly disagree (4). However, the values were reversed for statements 2, 3, 4, 6, 8, 9, 11, and 12, with strongly agreeing to score four and strongly disagree scoring 1. The total OLBI score was calculated by adding the two types of items, and the higher the score, the greater the level of burnout. According to Delgadillo et al., (2018), participants were considered to have low, medium, or high OLBI-D scores, based on scores above or below one standard deviation of the mean (Delgadillo et al., 2018).

The 4th section included the validated brief-COPE Inventory that outlined coping mechanisms in our sample (Ben, 2022). The questionnaire is divided into three sub-scales, including problem-focused coping, emotion-focused coping, and avoidant coping. The responses are based on a four-point Likert scale: 1= I haven't been doing this at all, 2= A little bit, 3= A medium amount, 4= I've been doing this a lot. The instrument had 28 coping statements, including eight problem-related, 12 emotion-related, and eight avoidant-related reports, accounts, views, and ideas. Higher scores indicate more significant use of that particular type of managing strategy.

Ethical considerations

An ethical approval for the study was obtained from the research ethics committee of the International Research Center King Abdulaziz, Saudi Arabia, with an ethical approval number: IRB/0671/22.

Data analysis

Data were statistically analyzed using the (SPSS) application version 26. Qualitative data were expressed as numbers and percentages and the Chi-squared test ($\chi 2$) was used to determine the association between the variables. Quantitative variables were expressed as mean and standard deviation (Mean ± SD), and the association between them was determined using the independent sample t-test, the One-Way ANOVA test, and Pearson's correlation analysis. Statistical significance was considered as a p-value of less than 0.05.

3. RESULTS

The mean age of studied participants was 36.48 ± 6.18 years, 64.9% were males, and 77.2% were married. Of them, 36.6% were forensic medicine specialists, and 11 (19.3%) were from the Dammam region. More than half of the participants had a work experience of 3-10 years (54.4%), and the mean number of taken cases was 5.05 ± 2.38 cases weekly, and the mean number of daily worked hours was 8.18 ± 7.23 hours (Table 1).

Table 1 Distribution of studied physicians according to their demographic and work characters (total number = 57).

Variable	No. (%)
Age (years)	36.48 ± 6.18
Gender	
Female	20 (35.1)
Male	37 (64.9)
Marital status	
divorced	2 (3.5)

Married	44 (77.2)
Single	11 (19.3)
Job title	
Consultant	11 (19.3)
Registrar	2 (3.5)
Resident	12 (21.1)
Senior registrar	11 (19.3)
Specialist	21 (36.8)
Forensic Medicine Center (alphabetical order)	
Abha	1 (1.8)
Ahsaa	3 (5.3)
Asir	6 (10.5)
Bisha	1 (1.8)
Dammam	11 (19.3)
Hafer albtin	1 (1.8)
Jeddah	10 (17.5)
Jizan	3 (5.3)
Madinah	5 (8.8)
Makkah	5 (8.8)
Riyadh	8 (14)
Taif	3 (5.3)
Work experience in forensic medicine	
From 1 year to 3 years	9 (15.8)
From 3 years to 10 years	31 (54.4)
More than 10 years	17 (29.8)
Number of cases taken each week	5.05 ± 2.38
Number of hours worked each day	8.18 ± 7.23

Figure 1 shows that taking a vacation (45.6%) and talking to friends (24.6%) were the most common coping strategies when feeling burnt out.

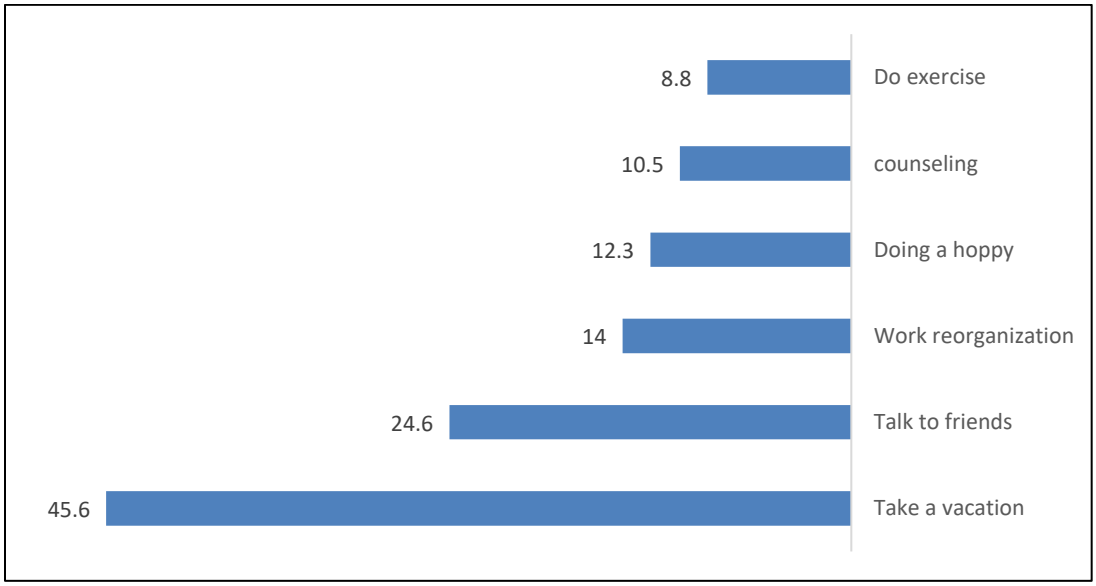

Figure 1 Percentage distribution of the participants according to coping strategies if feeling likeburnt out.

The mean Oldenburg Burnout Inventory (OLBI) score was 42.12 ± 6.66, and the mean Brief Cope Inventory score was 65.64 ± 11.37. Figure 2 illustrates that the prevalence of low, medium, and high burnout levels among studied physicians was 17.5%, 26.3%, and 56.1%, respectively.

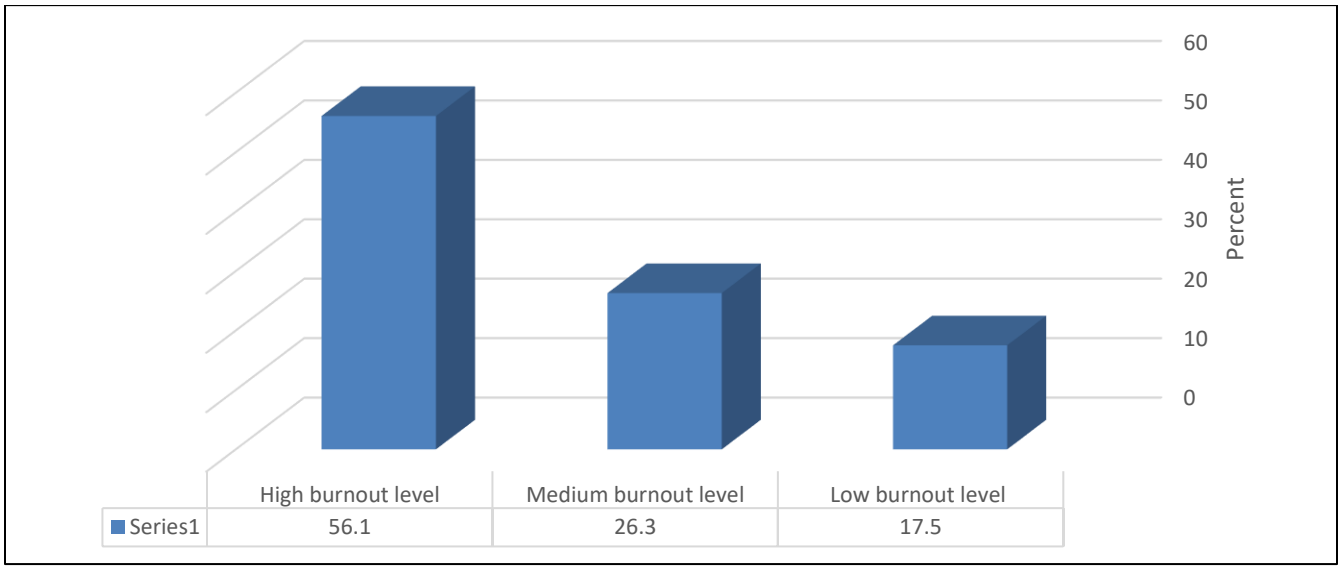

Figure 2 Percentage distribution of physicians according to burnout levels (total number = 57)

This study found a non-significant relationship between burnout levels and physicians' demographic and work characteristics (p= > 0.05) (Table 2).

Table 2 Relationship between burnout levels and physicians' demographic and work characters (total number = 57)

Variable	Burnout level			$\chi 2$		p- value
	Low No. (%)	Medium No. (%)	High No. (%)			
Gender						
Female	3 (30)	3 (20)	14 (43.8)	2.66		0.264
Male	7 (70)	12 (80)	18 (56.3)			
Marital status						
divorced	1 (10)	0 (0.0)	1 (3.1)	2.39		0.664
Married	7 (70)	13 (86.7)	24 (75)			
Single	2 (20)	2 (13.3)	7 (21.9)			
Job title						
Consultant	3 (30)	4 (26.7)	4 (12.5)	5.05		0.751
Registrar	0 (0.0)	0 (0.0)	2 (6.3)			
Resident	3 (30)	3 (20)	6 (18.8)			
Senior registrar	2 (20)	3 (20)	6 (18.8)			
Specialist	2 (20)	5 (33.3)	14 (43.8)			
Forensic Medicine Center *(alphabetical order)*						
Abha	1 (10)	0 (0.0)	0 (0.0)	17.97		0.707
Ahsaa	0 (0.0)	0 (0.0)	3 (9.4)			
Asir	1 (10)	1 (6.7)	4 (12.5)			
Bisha	0 (0.0)	0 (0.0)	1 (3.1)			
Dammam	1 (10)	4 (26.7)	6 (18.8)			
Hafer albtin	0 (0.0)	0 (0.0)	1 (3.1)			

Jeddah	1 (10)	3 (20)	6 (18.8)			
Jizan	0 (0.0)	1 (6.7)	2 (6.3)			
Madinah	1 (10)	2 (13.3)	2 (6.3)			
Makkah	1 (10)	1 (6.7)	3 (9.4)			
Riyadh	3 (30)	1 (6.7)	4 (12.5)			
Taif	1 (10)	2 (13.3)	0 (0.0)			
Work experience in forensic medicine						
From 1 year to 3 years	2 (20)	2 (13.3)	5 (15.6)			
From 3 years to 10 years	4 (40)	8 (53.3)	19 (59.4)	1.35		0.851
More than 10 years	4 (40)	5 (33.3)	8 (25)			

While the study found a significant positive correlation between the Oldenburg Burnout Inventory (OLBI) scores and the number of cases taken each week (r=0.29, p-value = 0.029) and the number of hours worked each day (r= -0.31, p-value = 0.021). Moreover, we found a non-significant positive correlation between the Oldenburg Burnout Inventory (OLBI) scores and participants' age, and the exact negative correlation with the Brief Cope Inventory score (p=> 0.05) (Table 3).

Table 3 Spearman's correlation analysis between Oldenburg Burnout Inventory (OLBI) scores andphysicians' age, number of cases taken each week, number of hours worked each day and the BriefCope Inventory scores.

Variable	Oldenburg Burnout Inventory (OLBI)	
	r	p-value
Age	0.21	0.119
Number of cases taken each week	0.29	0.029
Number of hours worked each day	0.31	0.021
Brief Cope Inventory score	-0.16	0.215

As for the coping strategies measured by the Brief Cope Inventory, we found a non-significant relationship between the Brief Cope Inventory mean score and physicians' demographic and work characteristics (p=> 0.05) (Table 4).

Table 4 Relationship between the Brief Cope Inventory mean score and physicians' demographicand work characters (total number = 57)

Variable	Brief Cope Inventory score (mean ± SD)	Test	p-value
Gender			
Female	63.6 ± 8.48	1*	0.167
Male	66.75 ± 12.63		
Marital status			
Divorced	71 ± 8.48		
Married	65.88 ± 11.88	0.37**	0.686
Single	63.72 ± 10.01		
Job title			
Consultant	68.54 ± 11.66		
Registrar	66.5 ± 12.02		
Resident	64.91 ± 8.52	0.75**	0.563
Senior registrar	60.81 ± 18.91		
Specialist	67 ± 6.93		
Forensic Medicine Center *(alphabetical order)*			
Abha	82 ± 7.15	0.84**	0.594

Ahsaa	63.66 ± 8.14		
Asir	70.16 ± 9.96		
Bisha	73 ± 5.36		
Dammam	64.63 ± 10.5		
Hafer albtin	61 ± 6.76		
Jeddah	62.8 ± 8.94		
Jizan	75 ± 13		
Madinah	69 ± 11.06		
Makkah	61.4 ± 9.8		
Riyadh	60.75 ± 17.97		
Taif	70.66 ± 8.5		
Work experience in forensic medicine			
From 1 year to 3 years	64.44 ± 6.18	0.9**	0.41
From 3 years to 10 years	64.29 ± 10.6		
more than 10years	68.76 ± 14.43		

N.B.: * Independent sample t-test **=The One-Way ANOVA test

At the same time, we found a non-significant correlation between the Brief Cope Inventory score and physicians' age with a positive relationship (p=>0.05). And a negative non-significant correlation was found between the number of cases taken each week and the number of hours worked each day (p=> 0.05) (Table 5).

Table 5 Pearson's correlation analysis between the Brief Cope Inventory score and physicians' age,number of cases taken each week, number of hours worked each day.

Variable	Brief Cope Inventory score	
	r	p-value
Age	0.24	0.076
Number of cases taken each week	-0.09	0.472
Number of hours worked each day	-0.1	0.907

4. DISCUSSION

Previous studies showed that burnout is a widespread issue primarily affecting more emotionally challenging specialties, including forensic medicine. Forensic healthcare professionals have a dynamic work environment with stressful and robust requirements to fulfill. These requirements are often related to their workload and working hours or repeated exposure to traumatic cases (Sehsah et al., 2021; Iorga (a) et al., 2016). Therefore, a substantial psychological burden reflects on physicians, and the lack of career development can lead to burnout (Sehsah et al., 2021). In the present study, we aimed to investigate the level of occupational burnout among forensic physicians in our country while outlining the major contributing factors to this rising issue and exploring the different coping mechanisms implemented.

The current study found that out of 57 forensic physicians, the vast majority, 56.1% experienced high burnout levels. In contrast, 26.3% and 17.5% experienced medium and low levels of burnout, respectively, according to the Oldenburg Burnout Inventory (OLBI) score. The results are similar to those of other studies in the field. An Egyptian Study published in 2021 found that forensic physicians had a moderate/high level of burnout at a rate of 72.9%, 51.9%, and 75.9% in the emotional exhaustion, depersonalization, and personal accomplishment sub-scales, respectively (Sehsah et al., 2021).

However, varying levels of burnout among forensic healthcare professionals was found in previous reports due to many interplaying factors. As Iorga (a) et al., (2016) pointed out, forensic physicians usually deal with situations that have a significant emotional or psychological effect, such as abuse of children or women, other forms of violence of varying severity, accidents, etc. These divergent stressful circumstances provoke personalized psychological reactions and lead to developing burnout (Iorga (a) et al., 2016). Gender in burnout has been the subject of conflict in many researches. Previous studies' findings were inconsistent regarding the correlation between gender and the level of burnout. Concerning sociodemographic variables, our study showed that most forensic physician participants had high burnout levels irrespective of gender.

Hence, this study found a non-significant relationship between gender and level of burnout. The non-significant association between gender and burnout was supported by a study conducted on Romanian forensic physicians (Iorga (a) et al., 2016; Kömür et al., 2017). Another study showed that men were more prone to develop emotional exhaustion compared to women (Sehsah et al., 2021). On the other hand, two studies published in 2020 and 2014 revealed that women either report greater burnout sub-scales or are more likely to experience burnout (Cieslak et al., 2014; García-Arroyo and Osca, 2017). These variations could be related to how men and women perceive stress and utilize coping methods (Cieslak et al., 2014; Elliott and Daley, 2013).

This study showed that a non-significant relationship was found between age of forensic practitioners and burnout. However, another study found that the depersonalization domain of burnout was higher with less experienced and younger forensic physicians (Sehsah et al., 2021). In agreement with previous research, this study also reflected a positive correlation between age and coping strategies acquired with time but with an insignificant relationship. This is in agreement with previous studies, where immature practitioners were more suitable for burnout. Moreover, a study published in 2016 proposed that the older the forensic physician, the higher their score in personal achievement, decreasing burnout levels (Iorga (a) et al., 2016; Iorga (b) et al., 2016). Nevertheless, unpredictably this study showed that the majority of forensic practitioners with a work experience of three to ten years endured high levels of burnout, similar to physicians with more than ten years of experience. Thus, raising the question of whether more work years increase the likelihood of burnout.

High levels of burnout are associated with the number of cases taken each week and the number of working hours each day. Thus, these factors are predictors of enormous impact on the level of burnout experienced by forensic physicians. Another study supported these findings and showed that high emotional exhaustion and depersonalization was associated with on-calls (Sehsah et al., 2021). In addition, previous studies highlighted the type of cases as an essential predictor of burnout. Cases involving children as victims, women of sexual assault, decomposing corpses, and the examination of hostile patients are the most unsettling, making forensic practitioners more prone to manifest symptoms of burnout and seeking medical and psychiatric therapy (Sehsah et al., 2021; Morar and Muja, 2020). However, types of cases were not associated with burnout in the current study.

Forensic physicians experiencing burnout often acquire a coping mechanism to relieve their stress. According to prior research, developing coping skills is necessary to establish the level of burnout (Kelty and Gordon, 2015). In this study, the most common coping strategies among forensic physicians who had burnout were. taking a vacation (45.6%) and talking to friends (24.6%). However, doing exercises was the least frequently used coping skill (8.8%). In comparison, another study revealed that physical activity was also one of the least preferable ways to cope, where it was only adopted by (5.41%) of the study participants (Iorga (a) et al., 2016). A study from Egypt concluded that forensic physicians most frequently adopted coping strategies were religion, planning, and acceptance that was regularly practiced by 84.9%, 72.9%, and 68.4%, respectively (Sehsah et al., 2021).

5. CONCLUSION

This study showed a high burnout rate among Saudi forensic practitioners, where the majority exhibited high levels of burnout. Advancing age was found to be a strong predictor of low burnout and learning to adopt positive coping strategies. The number of cases and working hours were significant factors providing a greater chance of manifesting symptoms of burnout. As increased workload with extra shifts in an environment full of stressful encounters imposes an additional burden on an individual lacking proper coping skill. The participants reported numerous coping mechanisms as taking a vacation that was the first choice by many forensic examiners.

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Authors' contribution

Mohammed S Alqhtany, Raneen N Abu Shanab, Sara O Aljohani, Waad A Alghamdi, Aseel S Mutawkkil, Mamdouh K Zaki, Ranya A Zahid: All shared in designing the study, developing the questionnaire and the informed consent. They wrote the protocol and planed the study and carried out the data collection, data entry, and the statistical design and analysis.

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Conflict of interest

The authors declare that there is no conflict of interests.

Data and materials availability

All data sets collected during this study are available upon reasonable request from the corresponding author.

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