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FACTORS THAT ARE ASSOCIATED WITH BURNOUT AMONG EMERGENCY MEDICINE RESIDENTS IN SAUDI ARABIA. A CROSS-SECTIONAL STUDY

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Abstract

Background: Burnout is a condition caused by prolonged exposure to an emotionally draining environment. It is a source of concern among resident doctors, especially those working in the emergency department. Herbert Freudenberger, a psychiatrist from the United States, created the term "burnout" in the seventies.

Objectives: In this study, our intention was to identify the factors which might result in burnout in Saudi Arabian physicians working in emergency medicine.

Methodology: In Saudi Arabia, emergency medicine residents were the subject for a cross-sectional questionnaire survey during 2023-2024. Staff members who have worked at the hospital for a minimum of six months were eligible to take part in the study. The data has been transferred, collected, and analyzed using SPSS. Raosoft website was used as a calculator for the sample size with confidence level 95%, and margin of error 5%.

Results: As regard factors associated with burnout among emergency medicine residents, there were 57.9% reported having taken at least one sick leave during the last year and 74.9% admitted to taking short meals during work, which could potentially contribute to increased stress and burnout levels. Surprisingly, only 41.4% of respondents reported being on a regular exercise regimen, highlighting a potential area for intervention to promote overall well-being. The prevalence of sleep disturbances was notably high, with 71.6% of residents personally dealing with this issue. Regarding relation between feeling burnt out and sociodemographic characteristics, there were a statistically significant relation to age (p value=0.0001), region of residence (p value=0.0001), and marital status (p value=0.001). It also

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shows statistically insignificant relation to gender, nationality, being an emergency healthcare provider, and number of months the participant had been a resident.
Conclusion: The findings indicated a high prevalence of burnout among participants, with various factors such as sick leave, short meal breaks, lack of exercise, and sleep disturbances contributing to increased stress and burnout levels. Sociodemographic characteristics like age, region of residence, and marital status were found to have a significant relation to burnout, highlighting the importance of considering these factors in addressing burnout among healthcare professionals.

Keywords: Burnout, syndrome, emergency department, ER, ED, emergency medicine residents, Saudi Arabia, KSA, cross sectional.

Introduction:
Burnout is a condition induced by a sustained exposure to an emotionally draining environment. It is characterized by a state of physical, mental, and emotional exhaustion [1]. It's a significant concern among resident doctors, especially those working in stressful departments such as emergency departments [2]. The dynamic, complicated, and demanding work environment that characterizes emergency medicine (EM) as a specialty [3]. A tough training program is residency. Resident practitioners are significantly more likely to struggle with burnout in the work environment that has heavy workloads, constrained schedules, expansive study and practice intervals, and frequent examinations and assessments [2]. For both the doctor and the patient, burnout in these people may result in harmful consequences [4].
it is related to deficient patient's management, decrease job satisfaction, depression and suicidal [5]. Burnout syndrome can additionally make health-related errors more likely and decrease job fulfillment, which promotes early retirement or rejection from the profession [6].
Herbert Freudenberger, an American psychologist, established the term "burnout" in the decade of the 1970s [7]. It required a long time to identify burnout because it was essential to establish transparent norms for a condition that was unclear and hard to diagnose [8]. The author who has done extensive studies on and addressed burnout syndrome is Cristina Maslach [9]. In accordance with Maslach et al., burnout has three associated dimensions [6]. Emotional exhaustion (EE), depersonalization (DEP), and a decreased feeling of personal accomplishment (PA) are the main indicators of burnout [10]. In multiple previous as well as ongoing studies, the Maslach Burnout Inventory (MBI), a general questionnaire, has been used in order to investigate the burnout behaviors as well as recognize its relevant factors [11]. Healthcare providers rate of burnout are approximately 2 times greater compared to the rest of the general population who work [12].
A study was published in 2021 in Jordan about burnout during residency training, the results refer to the majority of the participants (373 out of 481) were found to have burnout including other causes like stress or long working time [13]. Another study was conducted in the same year during COVID-19 among healthcare workers in Saudi Arabia and the results was 75% of them were suffering from burnout including the variables such as age, exposure to the cases, sleeping pattern [14]. Additionally, there is a study conducted in the kingdom of Bahrain in 2020 about burnout among emergency physicians, and it showed high prevalence of burnout in addition to other causative effects related to occupation or

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demographic information.
The lack of previous articles for the same population which is all Saudi emergency medicine residents regarding the prevalence and factors associated with burnout shined an opportunity for this research. Also, previous articles showed limitations within the sample [3,15]. With some articles containing a very small number of our targeted sample. A related study has shown that the effects of burnout syndrome has an adverse effect on the patient's quality of care, and that raises an important concern towards patient's well being [16]. The purpose of this study was to gauge present prevalence of burnout and satisfaction with work, and which current factors can be contributed to burnout among EM residents [12].

Objectives:
The purpose of this study was to identify the risk factors for burnout among emergency medicine residents in Saudi Arabia.

Materials and Methods:

Study design:
This study is a cross sectional questionnaire survey conducted in Saudi Arabia among emergency medicine residents from October 2023 to April 2024.

Study setting:
Participants, recruitment, and sampling procedure:
A sample of Saudi emergency medicine residents who voluntarily accepted to participate in the study in responding to questions about the causes of burnout were included.

Inclusion and Exclusion criteria:
The study we conducted included all Saudi emergency medicine residents who were at least 6 months into the training program. For those who still haven't completed 6 months were excluded from this study.

Sample size:
We used the Raosoft website as a calculator for our sample size. We calculated the sample size with confidence level 95%, and margin of error 5%. So, our sample size will be 377

Method for data collection and instrument (Data collection Technique and tools):
A questionnaire is used as our study tool. This questionnaire was taken from relevant studies done in Saudi Arabia. The questionnaire used is containing 5 sections. First section contains the biographical data questions. Second section contains lifestyle questions like work ours, physical activity, and facing sleep disturbance. Third section contains the personal related factors that may contribute to cause burnout. Forth section contains work related factors of burnout. Fifth section contains patient related factors of burnout. The medical students are our data collector, they will send questionnaire survey into

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the participants.

Analyzes and entry method:

Data was entered on the computer using the "Microsoft Office Excel Software" program (2016) for windows. Data was then transferred to the Statistical Package of Social Science Software (SPSS) program, version 20 (IBM SPSS Statistics for Windows, Version 20.0. Armonk, NY: IBM Corp.) to be statistically analyzed.
Collected Data was entered on a computer using the Microsoft Excel program (2016) for windows. Data was then transferred to the Statistical-Package of Social-Science Software (SPSS) program, version 20. To be statistically analyzed.

Results:

Table (1) displays various demographic parameters of a group of people with a total number of (430). Several key observations can be made. Most participants fall within the age range of 25 to 30 years, comprising 33.0% of the total sample, with a mean age of 32.1 years and a standard deviation of 6.2. In terms of gender distribution, the sample is predominantly male, accounting for 58.1% of the participants. Most participants are of Saudi nationality (98.6%), with only a small percentage being non-Saudi (1.4%). When considering the region of residence, the Western region has the highest representation at 34.4%, followed by the Eastern region at 20.2%. Regarding marital status, a significant portion of participants are married (56.7%), while 34.9% are single. Most participants (74.2%) work in the Emergency department, with ER nurses comprising the largest job position category at 34.9%. Additionally, a notable proportion of participants (77.4%) have been in the residency program for more than 6 months. The average weekly working hours vary, with 50.5% of participants working 40 hours per week, followed by 33.7% working 50 hours. These findings provide valuable insights into the sociodemographic profile and work characteristics of the participants in this study.

Table (1): Sociodemographic characteristics of participants (n=430)

Parameter		***No.***	***Percent (%)***
Age	25 or less	73	17.0
(Mean:32.1, STD:6.2)	25 to 30	142	33.0
	30 to 35	84	19.5
	More than 35	131	30.5
Gender	Female	180	41.9
	Male	250	58.1
Nationality	Saudi	424	98.6
	Non-Saudi	6	1.4
Region of residence	Northern region	41	9.5
	Southern region	102	23.7
	Central region	52	12.1
	Eastern region	87	20.2

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	Western region	148	34.4
Marital status	Single	150	34.9
	Married	244	56.7
	Divorced	36	8.4
Do you work in Emergency department?	No	111	25.8
	Yes	319	74.2
Job position	Consultant	6	1.4
	EMT	6	1.4
	ER nurse	150	34.9
	Lab	6	1.4
	Paramedic	6	1.4
	Reception	7	1.6
	Resident	113	26.3
	Senior resident	22	5.1
	Service	54	12.6
	Specialist	60	14.0
How many months have you been in residency program?	Less than 6 months	97	22.6
	more than 6 months	333	77.4
Hours of work per week	40	217	50.5
	50	145	33.7
	60	46	10.7
	70	22	5.1

As shown in figure 1, the provided figure illustrates the relationship between hours of work per week and the corresponding frequency of individuals working those hours, several noteworthy observations can be made. The data suggests that most individuals surveyed work around 40 to 50 hours per week, as indicated by the relatively higher frequencies of 217 and 145, respectively, for these hour brackets. This distribution indicates a commonality in the standard working hours for a significant portion of the sample population. Interestingly, as the number of hours worked per week increases beyond 50, there is a noticeable decline in the frequency of individuals working those hours, with only 46 individuals working 60 hours per week and a mere 22 individuals working 70 hours per week. This decline in frequency as the hours worked per week increase may imply a trend towards fewer individuals opting for longer work hours, possibly indicating a preference for a better work-life balance or the presence of policies promoting reduced working hours.

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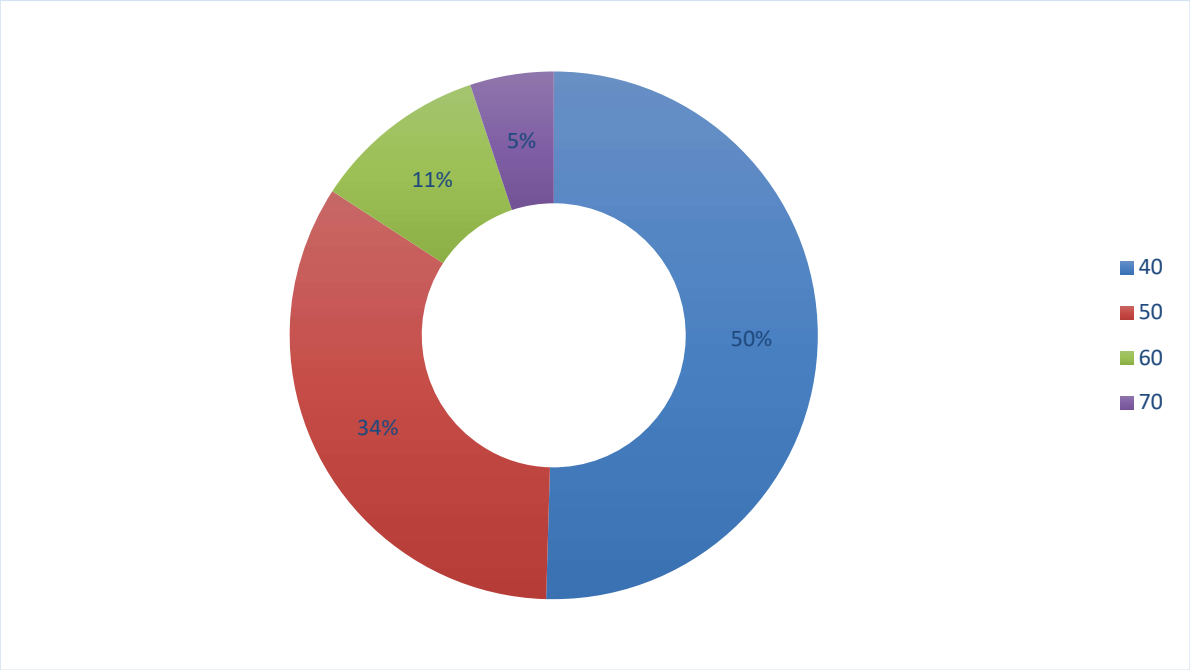
Figure (1): Illustrates hours of work per week among participants.



In analyzing the data presented in Table (2) concerning parameters associated with burnout among emergency medicine residents, several noteworthy trends emerge. Firstly, most respondents, 57.9%, reported having taken at least one sick leave during the last year. This indicates a significant proportion of residents experiencing health issues necessitating time off work. Additionally, a striking 74.9% admitted to taking short meals during work, which could potentially contribute to increased stress and burnout levels. Surprisingly, only 41.4% of respondents reported being on a regular exercise regimen, highlighting a potential area for intervention to promote overall well-being. The prevalence of sleep disturbances was notably high, with 71.6% of residents personally dealing with this issue. Furthermore, the frequency of feeling tired, physically exhausted, emotionally exhausted, and experiencing thoughts of being unable to cope varied among respondents, shedding light on the multifaceted nature of burnout in this population.

Table (2): Parameters related to factors that are associated with burnout among emergency medicine residents (n=430).

Parameter		***No.***	***Percent (%)***
Have you taken at least one sick leave during last year?	No	181	42.1
	Yes	249	57.9
Do you tend to take short meals during work?	No	108	25.1
	Yes	322	74.9
Are you on a regular exercise?	No	252	58.6
	Yes	178	41.4
Have you personally dealt with sleep disturbance?	No	122	28.4

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	Yes	308	71.6
How often do you feel tired?	Every day	176	40.9
	Once per week	131	30.5
	Once per month	62	14.4
	Never	61	14.2
How often are you physically exhausted?	Every day	97	22.6
	Once per week	180	41.9
	Once per month	72	16.7
	Never	81	18.8
How often are you emotionally exhausted?	Every day	98	22.8
	Once per week	160	37.2
	Once per month	82	19.1
	Never	90	20.9
How often do you think: "I can't take it anymore"?	Every day	77	17.9
	Once per week	112	26.0
	Once per month	161	37.4
	Never	80	18.6
How often do you feel worn out?	Every day	94	21.9
	Once per week	131	30.5
	Once per month	129	30.0
	Never	76	17.7

Upon reviewing the data presented in figure (2), it is evident that a substantial number of individuals experience feelings of being worn out on a regular basis. Specifically, the responses indicate that most participants reported feeling worn out either every day, once per week, or once per month. The highest frequency was recorded for those who feel worn out once per week, with 131 respondents falling into this category. This is followed closely by those who experience this feeling once per month, with 129 individuals reporting such occurrences. Interestingly, a significant portion of the respondents, 76 in total, claimed to never feel worn out. These findings shed light on the prevalence of fatigue and exhaustion among individuals, highlighting the importance of addressing mental and physical well-being to combat feelings of being worn out.

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Figure (2): Illustrates how often do healthcare providers feel worn out.

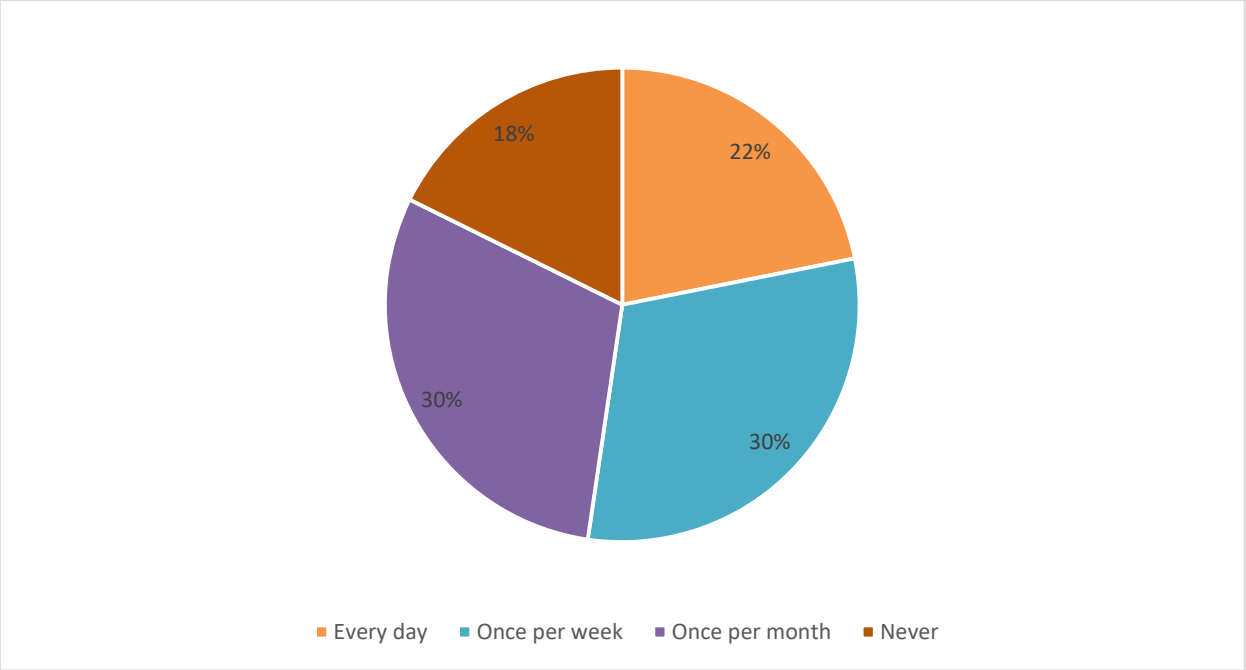

Table (3) reveals data on participants' awareness of factors associated with burnout among emergency medicine residents, with a sample size of 430. The table outlines responses to various questions regarding feelings of weakness, burnout, frustration, exhaustion, and energy levels among the participants. Noteworthy findings include a significant percentage reporting feeling weak and susceptible to illness daily, with 35.1% experiencing this once per month. Moreover, a considerable portion of respondents (32.8%) admitted feeling burnt out because of their work, while 30.2% expressed frustration with their work. Interestingly, a quarter of the participants feel worn out at the end of the working day, and a similar percentage find every working hour tiring. Additionally, a substantial number of respondents struggle to maintain energy for family and friends during leisure time, with 31.6% finding it frustrating to work with patients. These findings suggest a concerning level of burnout and dissatisfaction among emergency medicine residents, highlighting the importance of addressing these issues to ensure the well-being and effectiveness of healthcare professionals in this field.

Table (3): Participants' awareness towards factors that are associated with burnout among emergency medicine healthcare providers (n=430).

Parameter	*Everyday*	*Once per week*	*Once per month*	*Never*
How often do you feel weak and susceptible to illness?	28 6.5%	131 30.5%	151 35.1%	120 27.9%
Do you feel burnt out because of your work?	79 18.4%	131 30.5%	141 32.8%	79 18.4%

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Does your work frustrate you?	81 18.8%	108 25.1%	111 25.8%	130 30.2%
Do you feel worn out at the end of the working day?	115 26.7%	124 28.8%	109 25.3%	82 19.1%
Are you exhausted in the morning at the thought of another day at work?	63 14.7%	137 31.9%	99 23.0%	131 30.5%
Do you feel that every working hour is tiring for you?	78 18.1%	101 23.5%	119 27.7%	132 30.7%
Do you have enough energy for family and friends during leisure time?	79 18.4%	137 31.9%	116 27.0%	98 22.8%
Do you find it hard to work with patients?	63 14.7%	122 28.4%	109 25.3%	136 31.6%
Do you find it frustrating to work with patients?	52 12.1%	97 22.6%	125 29.1%	156 36.3%
Does it drain your energy to work with patients?	82 19.1%	120 27.9%	127 29.5%	101 23.5%
Do you feel you give more than you get back when you work with patients?	104 24.2%	136 31.6%	84 19.5%	106 24.7%
Are you tired of working with patients?	75 17.4%	110 25.6%	115 26.7%	130 30.2%
Do you sometimes wonder how long you will be able to continue working with patients?	102 23.7%	75 17.4%	141 32.8%	112 26.0%

Table (4) shows that the participants feeling burnt out because of their work has statistically significant relation to age (p value=0.0001), region of residence (p value=0.0001), and marital status (p value=0.001). It also shows statistically insignificant relation to gender, nationality, being an emergency healthcare provider, and number of months the participant had been a resident.

Table (4): Relation between feeling burnt out because of work and sociodemographic characteristics.

Parameters		***Do you feel burnt out because of your work?***		***Total (N=430)***	***P value****
		Daily or weekly	**Occasionally or never**		
Gender	Female	96	84	180	0.114
		45.7%	38.2%	41.9%	
	Male	114	136	250	
		54.3%	61.8%	58.1%	
Age	25 or less	34	39	73	0.0001
		16.2%	17.7%	17.0%	

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	25 to 30	87	55	142	
		41.4%	25.0%	33.0%	
	30 to 35	25	59	84	
		11.9%	26.8%	19.5%	
	more than 35	64	67	131	
		30.5%	30.5%	30.5%	
Nationality	Non-Saudi	1	5	6	0.112
		0.5%	2.3%	1.4%	
	Saudi	209	215	424	
		99.5%	97.7%	98.6%	
Region of residence	Northern region	35	6	41	0.0001
		16.7%	2.7%	9.5%	
	Southern region	37	65	102	
		17.6%	29.5%	23.7%	
	Central region	22	30	52	
		10.5%	13.6%	12.1%	
	Eastern region	63	24	87	
		30.0%	10.9%	20.2%	
	Western region	53	95	148	
		25.2%	43.2%	34.4%	
Marital status	Single	85	65	150	0.001
		40.5%	29.5%	34.9%	
	Married	101	143	244	
		48.1%	65.0%	56.7%	
	Divorced	24	12	36	
		11.4%	5.5%	8.4%	
Do you work in Emergency department?	No	49	62	111	0.251
		23.3%	28.2%	25.8%	
	Yes	161	158	319	
		76.7%	71.8%	74.2%	
Job position	consultant	6	0	6	N/A
		2.9%	0.0%	1.4%	
	EMT	6	0	6	
		2.9%	0.0%	1.4%	
	ER nurse	73	77	150	
		34.8%	35.0%	34.9%	
	Lab	0	6	6	

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		0.0%	2.7%	1.4%	
	Paramedic	0	6	6	
		0.0%	2.7%	1.4%	
	Reception	7	0	7	
		3.3%	0.0%	1.6%	
	resident	62	51	113	
		29.5%	23.2%	26.3%	
	senior resident	11	11	22	
		5.2%	5.0%	5.1%	
	service	29	25	54	
		13.8%	11.4%	12.6%	
	specialist	16	44	60	
		7.6%	20.0%	14.0%	
How many months have you been in residency program?	Less than 6 months	55	42	97	0.078
		26.2%	19.1%	22.6%	
	more than 6 months	155	178	333	
		73.8%	80.9%	77.4%	
Hours of work per week?	40	104	113	217	N/A
		49.5%	51.4%	50.5%	
	50	54	91	145	
		25.7%	41.4%	33.7%	
	60	30	16	46	
		14.3%	7.3%	10.7%	
	70	22	0	22	
		10.5%	0.0%	5.1%	

P value was considered significant if ≤ 0.05.

Discussion:

Burnout, a globally recognized work-related syndrome, encompasses emotional exhaustion, depersonalization, and a lack of personal accomplishment. Its consequences include depression, decreased work quality, low morale, absenteeism, and high turnover rates [17]. Burnout is also linked to physical and mental health issues, as well as potential drug and alcohol abuse and strained relationships. The demanding nature of the emergency medicine field, with its stressful workplace conditions and high-stakes decision-making, contributes to elevated burnout levels for both physicians and nurses [18]. This, in turn, negatively impacts the mood of medical staff, leads to increased absenteeism and turnover, and results in patient dissatisfaction due to diminished quality of care. Emergency medicine workers have been found to have a greater risk of burnout compared to other medical professionals [19]. Thus, we aimed in this study to identify the factors which might result in

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burnout in Saudi Arabian physicians working in emergency medicine.

As regard factors associated with burnout among emergency medicine residents, we have found that most respondents, 57.9%, reported having taken at least one sick leave during the last year. Additionally, a striking 74.9% admitted to taking short meals during work, which could potentially contribute to decrease stress and burnout levels. Surprisingly, only 41.4% of respondents reported being on a regular exercise regimen, highlighting a potential area for intervention to promote overall well-being. The prevalence of sleep disturbances was notably high, with 71.6% of residents personally dealing with this issue. On the other hand, a study by Alshehri et al. (2019) [20] found that 71.4% of emergency medicine residents experienced burnout, with factors such as workload and lack of social support contributing to higher levels of burnout. Consistently, another study by Alshamlan et al. (2020) [21] investigated the relationship between work-related stress and burnout among emergency medicine residents in Saudi Arabia. The study found a significant positive correlation between work-related stress and burnout, with higher levels of stress leading to increased burnout among residents. Similar to our results, a study by Alharthi et al. (2018) [22] explored the impact of sleep deprivation on burnout among emergency medicine residents in Saudi Arabia. The study found that residents who reported inadequate sleep were more likely to experience burnout, highlighting the importance of addressing sleep patterns to prevent burnout among healthcare professionals. Moreover, a study by Alghamdi et al. (2017) [23], the researchers examined the role of coping strategies in mitigating burnout among emergency medicine residents in Saudi Arabia. The study found that residents who utilized active coping strategies, such as seeking social support and problem-solving, were less likely to experience burnout compared to those who used passive coping strategies. Compared to our study results, a study by Singh et al. (2017) [24] examined the relationship between sick leaves and burnout among emergency medicine residents in India. The study, which included 150 residents, found that those who took more sick leaves were more likely to experience burnout symptoms. Residents who took more than five sick leaves in a year had significantly higher levels of burnout compared to those who took fewer sick leaves. Moreover, a study by Gupta et al. (2016) [25] investigated the impact of short meals on burnout among emergency medicine residents in India. The study, which included 180 residents, found that residents who reported eating meals in less than 20 minutes were more likely to experience burnout symptoms. Those who frequently ate short meals had higher levels of emotional exhaustion and depersonalization compared to those who took longer to eat their meals.

As regard relation between feeling burnt out because of work and sociodemographic characteristics, we have found a statistically significant relation to age (p value=0.0001), region of residence (p value=0.0001), and marital status (p value=0.001). It also shows statistically insignificant relation to gender, nationality, being an emergency healthcare provider, and number of months the participant had been a resident. On the other hand, In Turkey (2016), age, gender, and economic well-being were all significant predictors for burnout among emergency staff [26]. In Egypt, age, years of experience, frequency of exposure to violence at work, work burden, supervision, and work activities were significant determinants of burnout among emergency medical staff [27]. Consistently, Alaslani et al. (2016) found that younger (≤25 years), female, non-Saudi, low experienced, working more hours, and on-call emergency physicians working at Makkah, Riyadh, and Jeddah Saudi cities were more likely to express high emotional exhaustion compared to others [28].

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Conclusion:
In conclusion, this study revealed the prevalence and factors associated with burnout among emergency medicine residents in Saudi Arabia. The findings indicated a high prevalence of burnout among participants, with various factors such as sick leave, short meal breaks, lack of exercise, and sleep disturbances contributing to increased stress and burnout levels. Sociodemographic characteristics like age, region of residence, and marital status were found to have a significant relation to burnout, highlighting the importance of considering these factors in addressing burnout among healthcare professionals. The study underscores the need for interventions to promote overall well-being and prevent burnout in emergency medicine residents, ultimately improving the quality of care provided to patients in the healthcare system.

Acknowledgement:

We thank the participants who all contributed samples to the study.

Ethical approval
Ethical approval was obtained from the research ethics committee of the King Faisal University with Application number: [KFU-REC-2024-MAR-ETHICS2140]. An informed consent was obtained from each participant after explaining the study in full and clarifying that participation is voluntary. Data collected were securely saved and used for research purposes only.

Funding
The study did not receive any external funding.

Conflict of interests
The authors declare that there are no conflicts of interest.

Informed consent:
Written informed consent was obtained from all individual participants included in the study.

Data and materials availability
All data associated with this study are present in the paper.

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