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Prevalence of Burnout and Job Satisfaction Among Interventional Radiologists in Saudi Arabia

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Abstract

Purpose To evaluate the prevalence of burnout and job satisfaction among interventional radiologists (IRs) in Saudi Arabia.

Methods A cross-sectional survey was conducted in June 2023 among IRs in Saudi Arabia. An online survey was sent to the IR members of the Saudi Interventional Radiology Society via WhatsApp using Google Forms. The survey consisted of a Likert scale satisfaction questionnaire, Maslach Burnout Inventory questionnaire, demographics, and general questions. Statistical analysis was performed; $p < 0.05$ was considered significant when correlating between variables.

Results A total of 80/178 responses were received (44.9%), the majority were men (93.8%). The age group with the highest representation was 30 to 40 years (60%). Those between the ages of 30 and 40 had a higher (mean (standard deviation [SD])) depersonalization (DP) score (9 (3.6)) than those 51 and older (6.8 (4.5)). In addition, those who were practicing IR for 0 to 4 years (9.4 (3.5)) reported more DP than other participants ($p = 0.007$). Individuals who slept less than 5 hours per day had lower mean personal accomplishment. Most participants (76.3%) expressed satisfaction with their career choice, and 35% were satisfied with hospital staff appreciation, with neutral satisfaction levels for job salary and work/life balance.

Conclusion The study shows that about half of the IRs in Saudi Arabia have high levels of burnout. Most of them were satisfied with IR as a career choice, while less than a third were dissatisfied with both salary and work/life balance.

Keywords
- interventional radiologists
- interventional radiology
- burnout
- job satisfaction
- Saudi Arabia

Introduction

Burnout was first defined in 1974 by the psychologist Herbert Freudenberger as a state of mental and physical exhaustion due to “excessive demands on energy, strength, or resources.”[1] It was further described by social psychologist Christina Maslach as a triad of emotional exhaustion (EE), depersonalization (DP), and reduced sense of personal accomplishment (PA).[2] By 1981, Maslach created the Maslach Burnout Inventory (MBI), an instrument used to assess the degree of an individual’s symptoms of burnout.[2,3] It is a survey that consists of 22 questions with a 5-point scale that tackles three domains: EE, DP, and PA.[2,3] Multiple

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studies have shown that health care professionals (HCPs) are more susceptible to burnout than any other profession.[4,5] It can lead to multiple consequences that are not limited to HCPs, but to patient care as well.[5] For example, it can lead to high rates of medical errors, involvement in malpractice, and overall lower patient satisfaction.[6–8] Physicians with high risk of burnout are those who work in the front line (e.g., emergency medicine, family medicine, internal medicine, and obstetrics/gynecology).[9] In addition, studies have shown that female physicians experience burnout more than males.[9] One study that was conducted among residents across all specialties showed that 69% of residents met criteria for burnout and 17% of them screened positive for depression.[10] Moreover, burnout was found to be more in surgical specialties than nonsurgical ones.[10]

A recent cross-sectional study conducted in Saudi Arabia among HCPs showed moderate to high burnout levels presented in 87% of them. About third of the HCPs considered leaving their professions, and less than a third were diagnosed with mental health issues.[11] In 2017, a study from New England demonstrated that more than 30% of responding radiology residents had high levels of burnout, which was more evident in the postgraduate years.[12] Another study from Canada demonstrated mild burnout symptoms in PA among radiologists, but severe burnout in EE and DP.[13] A cross-sectional study among radiology residents in Saudi Arabia demonstrated that 25% of radiology residents have high rates of burnout; more than half reported high rates of EE.[14] Furthermore, a California online survey demonstrated that burnout was present in 71.9% of IRs, which was significantly higher in females who were working more than 80 hours per week.[15]

The continuous growth and diversity of what interventional radiologists (IRs) can offer to patients and referring physicians raises the demand for more IRs. This increases the workload and stress on IRs and subjects them to burnout. Currently, there is no study to demonstrate the burnout rate among IRs in Saudi Arabia. Therefore, the purpose of this study is to evaluate the prevalence of burnout and job satisfaction among IRs in Saudi Arabia.

Materials and Methods

Study Design and Setting

This is a cross-sectional survey that was conducted among IR members of the Saudi Interventional Radiology Society (SIRS), practicing in Saudi Arabia. The survey was structured on Google Forms and the link was sent to practicing IRs and fellows via WhatsApp. The survey was open for response through June 2023.

Study Sample and Size

Completed surveys were received from 80/178 SIRS members including practicing IRs and fellows, from all health care sectors in Saudi Arabia.

Questionnaire Development

The survey included four parts: demographics, general questions, satisfaction, and the MBI questionnaire.

The first section of the questionnaire included demographic characteristics (age and gender). The second section was divided into two parts, the first parts included questions about their training and current practice (location of training, current hospital, duration of practice, and whether they have an institutional leadership position). While in the second part, it included general questions about their work life (average hours of sleep per day, average working hours per day, and on-calls per month). For the third section, participants were asked about satisfaction (career choice of IR, salary, work/life balance, and appreciation from hospital staff). The satisfaction level of the specialists was measured using a 5-point Likert scale, 5 = very satisfied and 1 = very dissatisfied.

The last section of the survey was MBI, which included 21 questions that assess three categories: EE, DP, and PA. An unfeeling and impersonal response to recipients is described by DP, while PA describes feelings of competence and successful achievement in their professional life.[2] Additionally, work-related EE is measured by the subscale EE.[2]

Validation of the Questionnaire and Ethical Approval

Prior to study initiation, ethical approval for this study was obtained from King Faisal Specialist Hospital and Research Centre (KFSH & RC) Institutional Review Board (IRB), with study number: IRB 202374. After explaining the purpose of the study in detail, participants were invited to fill out the survey. To protect confidentiality, the survey did not include participants' names or personal details.

Data Collection

The survey was structured on Google Forms and the link was sent to practicing IRs and fellows in Saudi Arabia via WhatsApp. The survey was open for response through the month of June 2023. By July 2023, the data were collected from the completed surveys.

Statistical Analysis

Data management and analyses were performed using Stata (version 16) statistical software (StataCorp LLC, College Station, Texas, United States). In the descriptive analysis, the mean ± standard deviation (SD) was obtained for the continuous variables, while frequencies and percentages were obtained for the categorical variables. The Kruskal–Wallis test was conducted to assess the effects of demographic and work-related variables on the perceived EE score, DP score, and PA. $p < 0.05$ was considered statistically significant. The normality of the data was assessed to identify appropriate statistical tests. As the data follow the nonnormal distribution, nonparametric tests were applied. Correlation procedures were performed to determine the relationship between EE, DP, and PA scores using Pearson's correlation coefficient. Cronbach's α coefficients based on the sample were α (EE) = 0.84; α (DP) = 0.72; α (PA) = 0.82.

Results

Demographic and Work-Related Characteristics of the Participants

The demographic and work-related characteristics of the participants are described in ►**Tables 1** and **2**. A total of 80/178 (44.9%) participants responded to the survey. The vast majority were men (93.8%) while females were 6.25%. The age group with the highest representation was 30 to 40 years (60%). The average sleep duration of most participants (86.3%) was 5 to 8 hours per day. More than half of them (57.5%) were trained in Saudi Arabia and 20% were trained in Canada. In addition, 40% of responders were practicing in the Ministry of Health. Furthermore, 65% of IRs had institutional leadership positions, and almost half (48.8%) have practiced IR for 0 to 4 years. The average working hours for the majority (71.3%) was 8 to 12 hours per day. Almost half of them (55%) had more than 8 on-calls per month.

The (mean (SD)) DP score was higher among those aged between 30 and 40 years (9 (3.6)), compared with those aged 51 and above (6.8 (4.5)) ($p = 0.040$). The participants practicing IR for 0 to 4 years (9.4 (3.5)) also reported DP at a higher rate compared with others ($p = 0.007$). For doctors who had less than 5 hours per day of sleep, the mean (SD) score of PA was 21.3 (2.2) and the mean score DP for them was 10.2 (2.6), as shown in ►**Table 3**.

The MBI Tool and the Correlation between the Three Subscales

The result of the reliability test with Cronbach's α was 0.84 (EE), 0.72 (DP), and 0.82 (PA). The correlation between the subscales is shown in ►**Figs. 1**, **2**, and **3**. There was a significant relation between each of them. EE and DP had a strong positive correlation ($r = 0.377$, $p < 0.001$) while EE and PA had a strong negative correlation ($r = -0.260$, $p = 0.0196$), as well as DP and PA with a p-value <0.001; $r = -0.427$.

Job Satisfaction among Participants

►**Table 4** displays job satisfaction among participants using the 5-point Likert scale (very satisfied, satisfied, neutral, dissatisfied, and very dissatisfied). The majority of the participants (76.3%) reported satisfaction with their career choice. Additionally, the participants showed a neutral satisfaction about the following: their job salary (45%) and their work/life balance (42.5%). Almost 35% of the respondents were satisfied with the appreciation from hospital staff, while 25% of them were dissatisfied.

Discussion

As the demand for minimally invasive therapies guided by imaging continues to rise, the field of IR continues to grow. This development has led to enhanced patient outcomes, shorter hospital stays, and reduced morbidity and mortality rates across various organ treatments. Consequently, the workload for IR physicians has increased significantly over the years.[16] Prolonged exposure to interpersonal/emotional stressors at work can also lead to burnout syndrome.[17,18] Our study has shown that the mean score ± SD of EE, DP, and PA are 24.2 ± 9.3, 15.4 ± 7.8, 46.2 ± 6.1, respectively. Our findings correlate with the findings of a recent study that was published in Kazakhstan, where the level of burnout among primary health care workers was measured.[19] In addition, it aligns with the results of local studies.[11,20]

Unexpectedly, those 40 and younger reported the lowest EE score. This is in contrast to other studies where people older than 60 years reported the lowest.[21] For PA, like other studies, it was higher among those who are 51 and older.[21] Similarly, DP, like other studies, was lower in the older participants.[21] Higher DP among younger IRs could be related to shortage of IRs in Saudi Arabia.[22]

Regarding on-call shifts, one study among pediatric radiologists showed that on-call pediatric radiologists had higher scores in both EE and DP compared with those who are not on-call. Nevertheless, there was no association between being on-call and perceived lack of PA.[23]

Table 1 Demographic characteristics of participants ($n = 80$)

Variable	*n*	%
Age group		
30–40	48	60.0%
41–50	23	28.75%
51 and above	9	11.25%
Gender		
Female	5	6.25%
Male	75	93.75%
Average hours of sleep per day		
Less than 5 hours	11	13.75%
5–8 hours	69	86.25%
More than 8 hours	0	0.0%

Table 2 Work-related characteristics of participants ($n = 80$)

Variable	*n*	%
In which country did you get your IR training?		
Saudi	46	57.50%
Canada	16	20.00%
United States	4	5.00%
United Kingdom	1	1.25%
Europe	2	2.50%
Far East	4	5.00%
Other	7	8.75%
Where is your current practice/hospital?		
KFSH & RC	8	10.00%
MOH	32	40.00%
National Guard	10	12.50%
Military	5	6.25%
Armed Forces	4	5.00%
University	4	5.00%
Private	4	5.00%
Other	13	16.25%
Do you have an institutional leadership?		
Yes, program director	18	22.50%
Yes, section chief	18	22.50%
Yes, department chair	11	13.50%
Yes, others	5	6.25%
No, I don't have a leadership position	28	35.00%
How long have you been practicing IR?		
0–4	39	48.75%
5–9	16	20.00%
10–14	10	12.50%
More than 15 years	15	18.75%
Average working hours per day		
Less than 8	19	23.75%
8–12	57	71.25%
More than 12	4	5.00%
On-calls per month		
Less than 5	9	11.25%
5–8	27	33.75%
More than 8	44	55.00%

Abbreviation: IR, interventional radiologist; KSFH & RC, King Faisal Specialist Hospital and Research Centre; MOH, Ministry of Health.

Table 3 The Associations of burnout score with demographic and work-related characteristics ($n = 80$)

Participants ($n = 80$)	EE		DP		PA	
Variable	Mean (SD)	*p*	Mean (SD)	*p*	Mean (SD)	*p*
Age group						
30–40	11.1 (4.3)	0.255	9.0 (3.6)	**0.040***	22.9 (4.6)	0.156
41–50	13 (4.5)		7.1 (3.7)		22.1 (2.8)	
51 and above	12.6 (3.2)		6.8 (4.5)		24.7 (3.8)	
Gender						
Male	12.6 (5.3)	0.825	7.1(3.9)	0.460	23.3 (1.7)	0.131
Female	11.6 (4.0)		8.3 (3.9)		23.2 (4.4)	
Average hours of sleep per day						
Less than 5 hours	13.1 (3.2)	0.182	10.2 (2.6)	0.082	21.3 (2.2)	**0.045***
5–8	11.5 (4.2)		7.9 (4.0)		23 (4.4)	
More than 8	–		–		–	

(*Continued*)

Table 3 (*Continued*)

Participants ($n = 80$)	EE		DP		PA	
Variable	Mean (SD)	*p*	Mean (SD)	*p*	Mean (SD)	*p*
Where is your current practice/hospital?						
KFSH & RC	13.8 (2.9)	0.221	9.2 (3.3)	0.364	21.3 (4.1)	0.318
MOH	11.6 (3.7)		8.7 (4.0)		23.1 (4.7)	
National Guard	11.7 (4.0)		8.1 (4.0)		23.8 (4.1)	
Military	9.2 (5.2)		5.8 (5.0)		25.8 (3.8)	
Armed Forces	14.5 (4.6)		10.2 (4.8)		24.2 (5.7)	
University	6.5 (5.5)		5.2 (2.6)		24.2 (2.2)	
Private	12.7 (1.8)		6 (3.1)		26.5 (3.6)	
Other	12.2 (4.2)		8.3 (3.7)		22 (3.2)	
How long have you been practicing IR?						
0–4	11.3 (4.6)	0.266	9.4 (3.5)	**0.007***	22.8 (4.4)	0.437
5–9	11.6 (4.1)		8.3 (3.8)		23.3 (3.9)	
10–14	13.3 (3.7)		7.2 (4.0)		23.6 (3.9)	
More than 15 years	11.8 (2.8)		5.6 (4.2)		24.7 (4.4)	
Average working hours per day						
Less than 8	10.0 (4.3)	0.081	8.9 (4.5)	0.543	24.0 (4.7)	0.212
8–12	12.2 (3.7)		8.1 (3.8)		23.1 (3.9)	
More than 12	13.0 (7.1)		6.5 (4.0)		21.7 (7.1)	
On-calls per month						
Less than 5	10.2 (3.4)	0.441	8.4 (3.7)	0.402	23.1 (3.9)	0.853
5–8	11.8 (4.4)		9.0 (4.1)		22.9 (4.5)	
More than 8	12.0 (4.1)		7.7 (3.9)		23.5 (4.2)	

Abbreviations: DP, depersonalization; EE, emotional exhaustion; IR, interventional radiologist; PA, personal accomplishment; SD, standard deviation.
*Statistically significant *p*-values are indicated in bold.

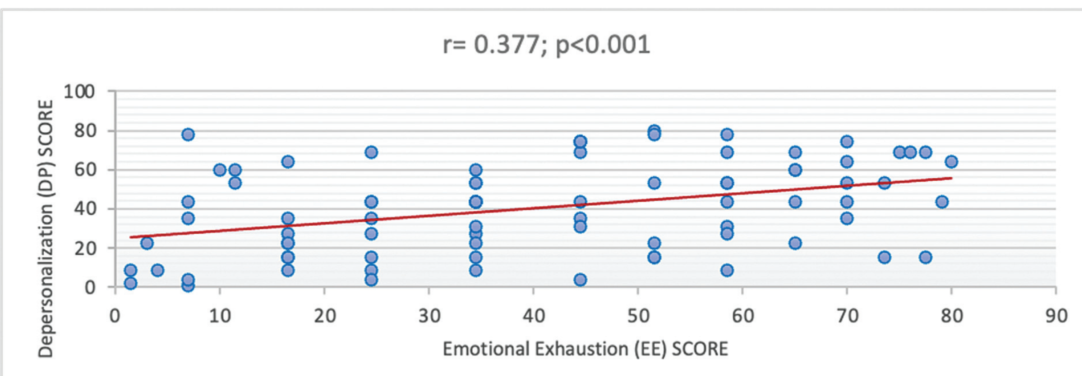

Fig. 1 Correlation between emotional exhaustion (EE) and depersonalization (DP).

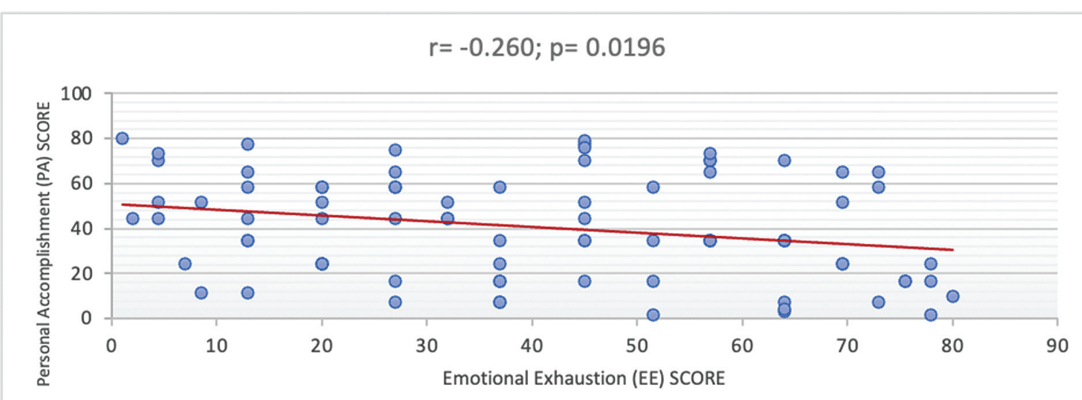

Fig. 2 Correlation between emotional exhaustion (EE) and personal accomplishment (PA).

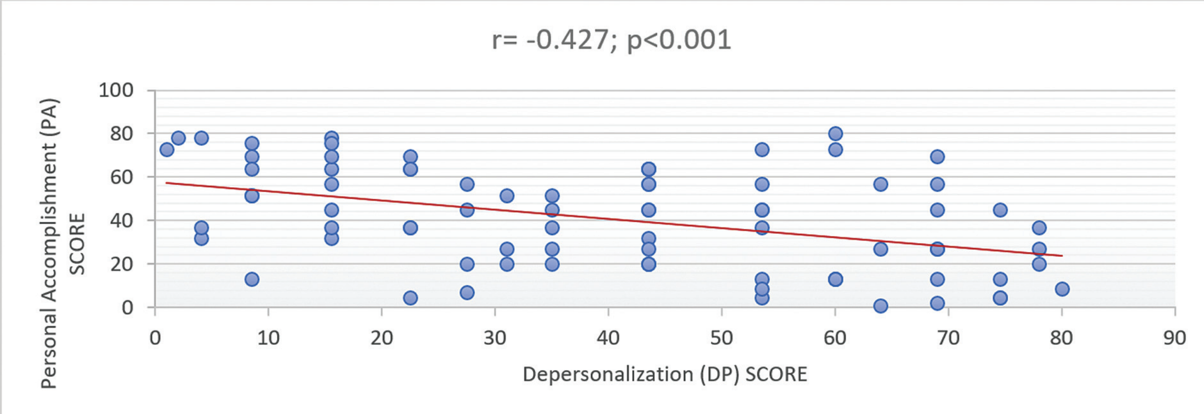

Fig. 3 Correlation between depersonalization (DP) and personal accomplishment (PA).

Table 4 Job satisfaction among participants ($n = 80$)

Items	Very satisfied	Satisfied	Neutral	Dissatisfied	Very dissatisfied
Satisfaction with the career choice of interventional radiology	61 (76.25%)	16 (20.00%)	3 (3.75%)	–	–
Satisfaction with job salary	3 (3.75%)	22 (27.50%)	36 (45.00%)	15 (18.75%)	4 (5.00%)
Satisfaction with work/life balance	5 (6.25%)	27 (33.75%)	34 (42.50%)	13 (16.25%)	1(1.25%)
Satisfaction with appreciation from hospital staff	9 (11.25%)	28 (35.00%)	19 (23.75%)	20 (25.00%)	4 (5.00%)

For job satisfaction, similar to other studies, most of participants were satisfied with IR as a career choice.[24]

A previous study found that by providing educational videos and patient education, physicians can promote awareness of IR.[25] Moreover, Promotion of IR is essential for the continued recruitment of high-quality candidates. Also, it is important to monitor and standardize the training environment on a national and international level in order to properly equip IR trainees and to consolidate this specialty's status as a medical specialty.[26]

Limitations

The survey was restricted to IRs practicing in Saudi Arabia, representing a small number of physicians, with lower response by older age group, which may affect the study results and conclusion. Also, this survey did not clarify whether working hours included afterhours involvement in private hospitals or not. The study did not evaluate the association between burnout and being in leadership positions.

Conclusion

In conclusion, close to half of the IRs in this survey reported high levels of burnout. EE and PA were the highest in those 51 and above, while DP was more significant in those 40 and younger. More than half were satisfied with IR as their career choice, and only less than one-third were dissatisfied with both the salary and work–life balance.

Data Availability Statement
The data are available upon reasonable request from the corresponding author.

Ethical Approval Statement
The study received approval from the Institutional Review Board (IRB) at King Faisal Specialist Hospital and Research Center, Jeddah, Saudi Arabia with number IRB: 202374. Participants were invited with a clear study description, and voluntary participation was emphasized. Participants had the right to withdraw at any time without obligation. All information was handled with confidentiality and anonymously.

Authors' Contribution
A.I.J.: study Concept, study design, data collection, supervision, project administration, final approval of the manuscript. R.M.A. and L.M.A.: data collection, writing manuscript, review, editing.

Conflict of Interest
None declared.

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