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Prevalence of Burnout Syndrome and Its Associated Factors among Saudi Board Residents in Saudi Arabia, 2019

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Authors' contributions

This work was carried out in collaboration among all authors. Author SSB designed the study, performed the statistical analysis, wrote the protocol and wrote the first draft of the manuscript. Authors SKAER and AN managed and supervised the analyses of the study. Author AN managed the literature searches. All authors read and approved the final manuscript.

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ABSTRACT

Aims: This aimed to determine the prevalence of burnout syndrome and its associated factors among Saudi board residents in Saudi Arabia in 2019

Methods: The Cross-Sectional Study in all accredited training centers all over Saudi Arabia in 700 training centers accredited by SCFHS. The Study Population constitutes residents trained in the Saudi board residency programs all over the country. Inclusion criteria were A Resident in an accredited training center under the umbrella of SCFHS. A Saudi resident and A resident still in the training program. The exclusion criteria were Fellows or Diplomas, or are not under the SCFHS residency programs Non-Saudi residents and any resident having psychiatric disorders or chronic diseases. The required sample size was 369 residents. All residents were about [9000] in all training centers all over Saudi Arabia. The total number to invite was 1845 residents who asked to participate in this study. The data checked for completeness and accuracy. Handling and storing data on my personal computer, it was edited, coded, and entered on SPSS for IBM version 22.

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Results: The majority of this study participants as shown from (Table 1), were male and from those participants married residents were more, 60.7%, 53.1 % respectively. 62.6% of them are from the Central and western regions in KSA. Between those residents, we found that the majority of their specialties were internal medicine, surgeries, family medicine then pediatrics respectively. 21.4% of them were obese while %35.8 are overweight and the rest were normal. about 53.9% of the respondents had a high score of emotional exhaustion, 50.1% had a high score of depersonalization and 21.4% had a low score of personal accomplishment. 32.8% (n=121) are smokers, and 47.4% (n=175) had sleep disorder, while 35.5% (n=131) of those residents are doing exercise. Just 2 residents have chronic diseases and 18 residents requested mental health assessment. Chi-square test showed internal medicine, as well as other specialties, are more affected than surgical, pediatrics, and family medicine. Through the regression model, it was shown that Depersonalization was the best predictor of the Burnout index, after adjusting for the rest of the covariates (beta=1.87; p<0.001). EE was the second-best predictor of the Burnout index, after adjusting for the rest of the covariates (beta=0.12; p<0.001).

Conclusion: There is a high rate of burnout among doctors of internal medicine. Significant correlation factors were working hours and the number of working days per week. Trainees reported the highest frequency of burnout. Multidimensional interventions, which can target a wide range of burnout triggers, incorporating various therapeutic tools, can help reduce burnout rates in healthcare providers.

Keywords: Burnout syndrome; internal medicine; Saudi Arabia; healthcare provider.

1. INTRODUCTION

Rapid advances in the ever-changing field of medicine, its tireless related educational requirements, long working hours, and an extremely low tolerance for errors all have a huge negative impact on medical students predisposing them to psychological morbidity. With an allegedly weaker "survival reserve" due to less time for self-service, these students often fall victim to some harmful consequences, such as substance abuse or even suicide, with studies showing that the number of people burned out as one in five students their life [1]. The term "burnout" was first introduced by the American psychologist Herbert Freudenberger in his research in 1974, where he described it as "exhaustion due to inability to cope with growing demands for work, manifested by headaches, sleep, behavior." Burnout is a psychophysiological syndrome that consists of a trinity of emotional and physical exhaustion, the manifestation of impersonal attitudes, and the loss of a sense of success for oneself [2].

The three main components of the Burnout Syndrome (BOS) are tremendous exhaustion, feelings of cynicism or depersonalization, and feelings of inefficiency and less effectiveness [3]. The procedural nature of burnout refers to the cumulative negative consequences of long-term work stress due to exhaustion. In clinical settings, evidence shows that burnout syndrome causes prescription errors and reduces the quality of medical services [4].

It is also one of the most common mental health problems faced by trainees or trainees in medicine or surgery who are junior doctors with a bachelor's degree in medicine and a bachelor's degree in surgery or a doctoral degree in medicine and who undergo specialized supervised training in medicine or surgery. Burnout contributes to low job satisfaction [5].

Burnout syndrome is the predominant psychological syndrome among residents and general practitioners due to exposure to chronic and high work stress. It is characterized by the loss of emotional, mental, and physical energy due to high and long-term levels of work stress. It is defined as a combination of three elements, Depersonalization (DP), Emotional Exhaustion (EE), and Personal Accomplishment (PA) [6].

Burnout is common in employees who work in stressful environments. Based on the extensive evidence available, burnout is very common in health professions such as health professionals. Emotional exhaustion, exhaustion of emotional energy due to constant work demands; depersonalization, a feeling of emotional distance from patients or work; and low personal success, which is less self-confidence or work efficiency [7].

Although depletion among the population remains insufficiently recognized, many important issues are open for discussion. First, the overall incidence of burnout syndrome in the population is unclear due to different working conditions in different medical and surgical fields. Previous evaluations have focused on the prevalence of burnout syndrome in one specialty. Second, variations in burnout prevalence range ranging from 18.7% to 74.8%, mainly due to different assessment methods and small samples. Third, the effect of demographic variables (e.g. gender, age, geographical area) on burnout rates has not been sufficiently tested. As a result, there is a strong rationale for researching the incidence of burnout [8].

Burnout has serious potential consequences for employees, employers, customers, and institutions. This includes mental and physical illness, work-related conflicts, absence, reduced work performance, less commitment to work, and suboptimal patient care practices that can eventually lead physicians to leave the medical field [9].

After the consequences of this syndrome, the published data are limited to medical and cirrhotic diseases in Saudi Arabia. This study was conducted to determine the prevalence of burnout syndrome and its associated factors among Saudi board residents in Saudi Arabia in 2019.

1.1 Study Rationale

Among Saudi Board Residents in Saudi Arabia, numerous residents complained of some of the symptoms of work burnout. But unfortunately, there has been no study to determine the prevalence of Burnout Syndrome and its associated factors among those residents or at least a representative sample from them.

Burnout Syndrome affects physicians' performance in general and their educational outcomes "behavior, information, and skills". This unfavorable outcome may progress in their postgraduate practice and can affect their academic performance adversely if there is no intervention to minimize work burnout prevalence and its risk factors. To start with, the intervention, the prevalence, and risk factors of burnout should be well known. This study aimed to identify some of these gaps. This study is the first of its kind in the kingdom of Saudi Arabia done among Saudi Commission for Health Specialties (SCFHS) residency programs all over the country.

1.2 Aim of the Study

To determine the prevalence and associated factors of burnout syndrome among Saudi Board residents all over the kingdom.

1.3 Objectives

1. To determine the prevalence of burnout syndrome among Saudi board residents in the KSA.
2. To compare the prevalence of BOS among different medical specialties.
3. To identify the potentially related factors to BOS among the Saudi board residents in the KSA.

2. METHODOLOGY

2.1 Study Design

This study adopted an analytical Cross-Sectional Study.

2.2 Study Site

The study sites for the research were all accredited training centers all over Saudi Arabia. There are currently about 700 training centers accredited by SCFHS. The Saudi Commission for Health Specialties accredits these centers as accredited training centers in Saudi Board. These centers are under government agencies from health service providers in Saudi Arabia such as the Ministry of Health which has the largest number of these centers, the Ministry of Defense, the Ministry of National Guard, medical cities, and specialized hospitals, security forces hospital, universities and university hospitals.

2.3 Population and Sampling

The Study Population constitutes residents trained in the Saudi board residency programs all over the country.

2.4 Inclusion and Exclusion Criteria

2.4.1 Inclusion criteria

1. A Resident in an accredited training center under the umbrella of SCFHS.
2. A Saudi resident.
3. A resident still in the training program.

2.4.2 Exclusion criteria

1. Fellows or Diplomas, or are not under the SCFHS residency programs.
2. Non-Saudi residents.
3. Any resident having psychiatric disorders or chronic diseases.

2.5 Sample Size Determination

By using the formula below for determining sample size for the dependent sample with effect size 0.5 because of big variations in the prevalence from the previous studies [10-13], with power 95% and alpha error 0.05.

$$N = \frac{z^2\, p(1-p)}{\varepsilon^2}$$

The required sample size was 369 residents. All residents were about [9000] in all training centers all over Saudi Arabia. The total number to invite was 1845 residents who asked to participate in this study. The preparation of the study took about two months to obtained approval and consent from the SCFHS and Program Research Committee. After preparations and approvals, a questioner was sent through the SCFHS database to the target population. With any significant change in the prevalence and associated factors between different programs or regions, a recommendation will be sent to the Training Affairs of SCHS to make an appropriate intervention to save the residents and the practice.

2.6 Statistical Analysis

The data checked for completeness and accuracy. Handling and storing data on my personal computer, it was edited, coded, and entered on SPSS for IBM version 22. The description of data done as Mean and Standard deviation for quantitative variables, number, and percentages for qualitative one. Test for normal distribution done to the collected data. The data were normally distributed, Chi-square test used to compare differences in the prevalence of BOS between Saudi Board Residency Programs and between regions and different levels of training programs. Logistic regression used to compare and predict our study result. A P-value less than 0.05 considered as significant.

2.7 Data Collection Tools

A self-administered questionnaire consists of three parts:

- The first part includes personal data, work history, medical history, Special Habits, workplace, and training risk factors. [Annex 1]
- In the second part, the Maslach Burnout Inventory (MBI) is reliable, valid [14], and easy to administer. It is designed to assess the 3 components of the burnout syndrome: emotional exhaustion, depersonalization, and reduced personal accomplishment using 22 items which were divided into the 3 subscales. The items were answered in terms of the frequency with which the respondent experiences these feelings, on a 7-point (from 0 “never” to 6 “every day”) [15]. The 9 items in the emotional exhaustion subscale (statements 1–9) assessed feelings of being emotionally overextended and exhausted by one’s work. The 5 items in the depersonalization subscale (statements 10–14) measure an unfeeling and impersonal response toward recipients of one’s service, care, treatment, or instruction. For both the emotional exhaustion and depersonalization subscales, higher mean scores match to higher degrees of experienced burnout. The 8 items in the personal achievement subscale (statements 15–22) assess feelings of competence and successful accomplishment in one’s work with people. In contrast to the other 2 subscales, lower mean scores on this subscale link to higher degrees of experienced burnout [15]. The scores for each subscale measured separately and not combined into a single, total score; thus, 3 scores are computed for each respondent. If desired for individual feedback, each score can then be coded as low, average, or high by using the numerical cut-off points listed on the scoring key [14]. We used the cut-off scores of ≥ 26 for high emotional exhaustion, ≥ 9 for high depersonalization, and ≤ 33 for diminished personal accomplishment [16].

In the current study, the MBI was found to be a dependable instrument with sufficient coefficients of internal consistency (Cronbach α = 0.74 for emotional exhaustion, α = 0.78 for depersonalization and α = 0.71 for personal achievement subscales).

- The third part includes 7 multiple choice questions to measure Burnout related

factors, solutions, coping, and two yes/no questions to assess the harassment and discrimination of trainees.

These were well prepared on the Google form website. After that, the link sent to all participants from SCFHS databases through Emails.

3. RESULTS

The majority of this study participants as shown from (Table 1), were male and from those participants married residents were more, 60.7%, 53.1 % respectively. 62.6% of them are from the Central and western regions in KSA. Between those residents, we found that the majority of their specialties were internal medicine, surgeries, family medicine then pediatrics respectively. 21.4% of them were obese while %35.8 are overweight and the rest were normal. Regarding to their satisfaction with their jobs, 28.4% of them were unsatisfied (n= 105), 33.3% were neutral (n= 123) and 38.2% were satisfied (n= 141).

As shown from (Table 2), about 53.9% of the respondents had a high score of emotional exhaustion, 50.1% had a high score of depersonalization and 21.4% had a low score of personal accomplishment. The overall prevalence of BOS, 40.4% of Saudi Board residents (n=149) scored high on Burnout Syndrome.

Table 1. Demographic Characteristics of the Study Participants

Demographics	Frequency (N)	Percentage (%)
Gender		
Male	224	60.7
Female	145	39.3
Marital Status		
Married	196	53.1
Single	167	45.3
Divorced	6	1.6
Region		
Southern region	87	23.6
Central region	119	32.2
Eastern region	51	13.8
Western region	112	30.4
Specialty		
Family Medicine	57	15.4
Internal Medicine	82	22.2
Pediatric	52	14.1
Surgical Specialties	65	17.6
Others	113	30.6
Level of Training		
R1	111	30.1
R2	83	22.5
R3	52	14.1
R4	75	20.3
Above	48	13.0
Body Mass Index		
Normal	158	42.8
Overweight	132	35.8
Obese	79	21.4
Satisfaction with job		
Highly Unsatisfied	48	13.0
Unsatisfied	57	15.4
Neutral	123	33.3
Satisfied	95	25.7
Highly Satisfied	46	12.5

Table 2. BOS Clinical Characteristics of Saudi Board resident

Clinical Characteristics	Frequency (N)	Percentage (%)
Emotional Exhaustion		
High	199	53.9
Moderate	71	19.2
Low	99	26.8
Depersonalization		
High	185	50.1
Moderate	73	19.8
Low	111	30.1
Personal Accomplishment		
High	199	53.9
Moderate	91	24.7
Low	79	21.4
Diagnosis of BOS		
Not diseased	220	59.6
Diseased	149	40.4

Table 3. Health Status of Saudi Board Residents

Health Status	Response	Frequency (N)	Percentage (%)
Do you have any chronic diseases?	Yes	2	0.5
	No	367	99.5
In the last year, did you have or request for any mental health assessment?	Yes	18	4.9
	No	351	95.1
Have you taken any psychiatric medications in the last year?	Yes	0	0.0
	No	369	100.0
Did you consume any type of smocking in last year?	Yes	121	32.8
	No	248	67.2
Do you have any sleep disorders?	Yes	175	47.4
	No	194	52.6
Do you exercise?	Yes	131	35.5
	No	238	64.5

Of our sample, 32.8% (n=121) are smokers, and 47.4% (n=175) had sleep disorder, while 35.5% (n=131) of those residents are doing exercise. Just 2 residents have chronic diseases and 18 residents requested mental health assessment. As shown in Table 3.

About 29.3% (n=108) of the research sample reported the existence of a staff- wellbeing clinic/program and more than 73% (n=270) believed that such clinics would be useful and beneficial to the trained doctors. We noted, based on the response of the trainees, that 88% (n=326) had not heard of Burnout syndrome before, and only about 18% (n=67) of those asked for help when they came under stress or suffered in training programs. Regarding the trainees' harassment exposure during their training period, unfortunately, 45.8% (n=169) of them were exposed to harassment, and about 47.2% (n=174) of these samples also exposed to discrimination during their training. As shown in the above Table (4).

3.1 Comparison of BOS between Deferent Medical Specialties

Because one of the aims of this study was to compare the prevalence of BOS among different medical specialties, the Chi-square test was used to determine the prevalence of this syndrome in different specialties.

As we can see in Table 5, there is no significant difference in the prevalence of BOS between medical specialties.

We noted that internal medicine as well as other specialties are more affected than surgical, pediatrics, and family medicine.

3.2 Logical Model

The model explains 8% (Nagelkerke's R^2 =0.886) of the variance of the dependent variable. That means a suboptimal value, perhaps because the covariates included are structural. Through the regression model, it was shown that Depersonalization was the best predictor of the Burnout index, after adjusting for the rest of covariates (beta=1.87; p<0.001). EE was the second-best predictor of the Burnout index, after adjusting for the rest of the covariates (beta=0.12; p<0.001) as shown in Table 6.

3.3 Comparing Diseased with Non-Dis. Using Independent T-test

As shown in the Table 7. The sources of variations have been analyzed and comparison of mean standard deviation was calculated and according to Mann-Whitney Test all of the three variations are significantly associated diagnosis of BOS.

Table 4. Questionnaire Response

Questions	Frequency (N)	Percentage (%)
Do you have a Staff-wellbeing program/clinic in your training center?		
Yes	108	29.3
No	261	70.7
Do you think the availability of the Staff-wellbeing program/clinic will be useful?		
Yes	270	73.2
No	99	26.8
Did you hear about Burnout terminology before?		
Yes	326	88.3
No	43	11.7
Did you seek help regarding Burnout before?		
Yes	67	18.2
No	302	81.8
Have you been exposed to any form of harassment during your training?		
Yes	169	45.8
No	200	54.2
Have you ever been exposed to any Discrimination during your training?		
Yes	174	47.2
No	195	52.8

Table 5. Diagnosis of BOS * Specialty Cross tabulation

		Count					
		Specialty					Total
		Family Medicine	Internal Medicine	Pediatric	Surgical Specialties	Others	
diagnosis of BOS	not diseased	41	45	32	40	62	220
	diseased	16	37	20	25	51	149
Total		57	82	52	65	113	369

Chart 1. Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	5.593[a]	4	.232
Likelihood Ratio	5.741	4	.219
Linear-by-Linear Association	1.991	1	.158
N of Valid Cases	369		

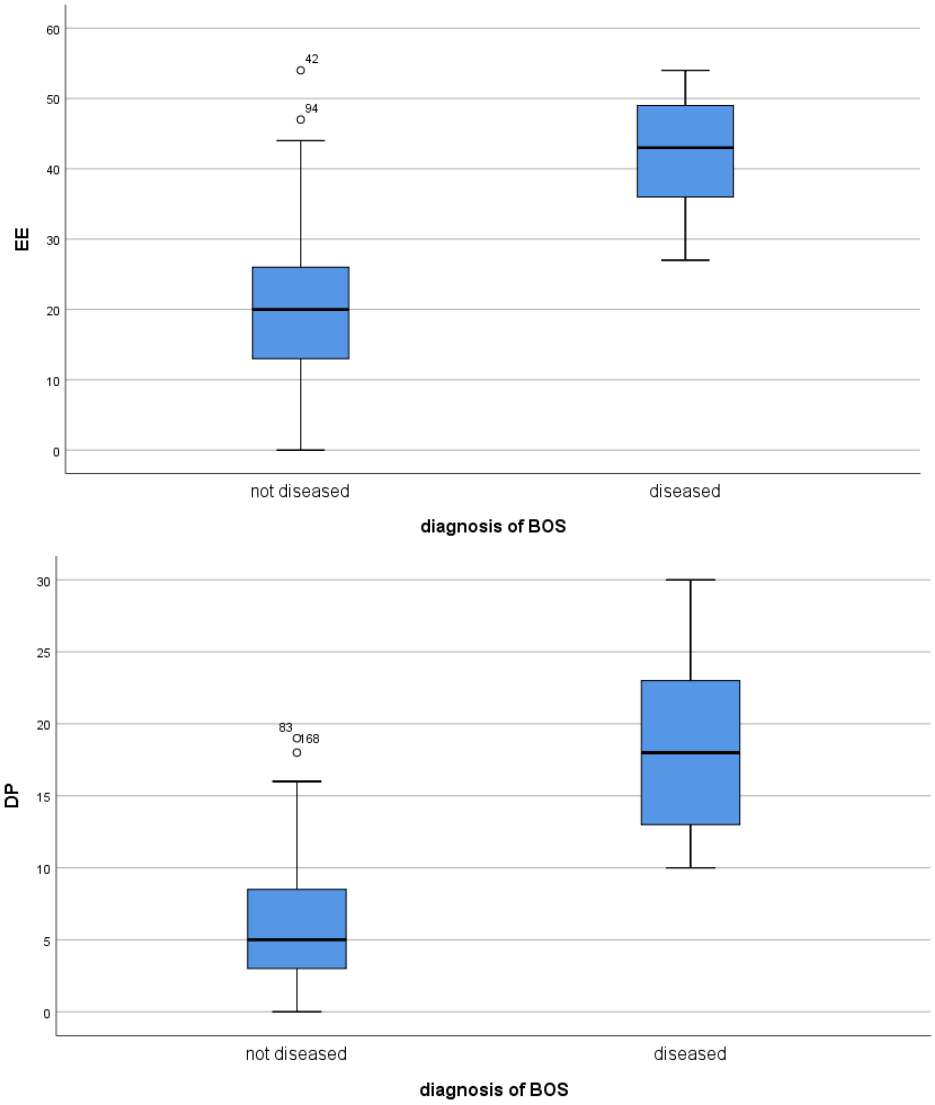
Table 6. Predictor of the burnout index

Model	Standardized Coefficients (Beta)	wald	Sig.
EE	1.278	37.107	0.001
DP	1.877	36.040	0.001
PA	0.991	0.091	0.763

R Square = 0.656Adjusted R Square = 0.886

Table 7. Results of T-test

Source of Variation	Diagnosis of BOS	N	Mean	Std. Deviation	P-value
EE	not diseased	220	20.214	10.047	**0.001**
	diseased	149	**42.242**	7.979	
DP	not diseased	220	5.941	4.135	**0.001**
	diseased	149	**18.174**	5.878	
PA	not diseased	220	**32.700**	9.905	**0.001**
	diseased	149	28.060	9.710	



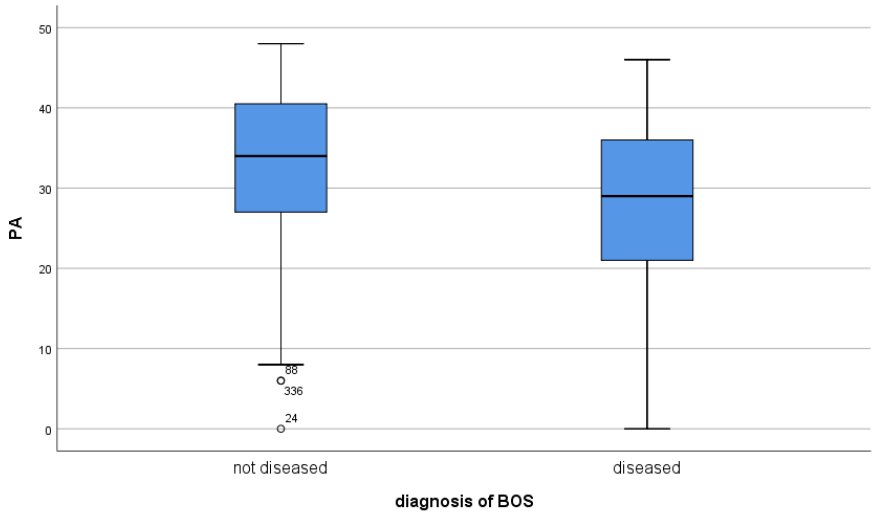


Fig. 1. Graphical representation of different variables for diagnosis of BOS

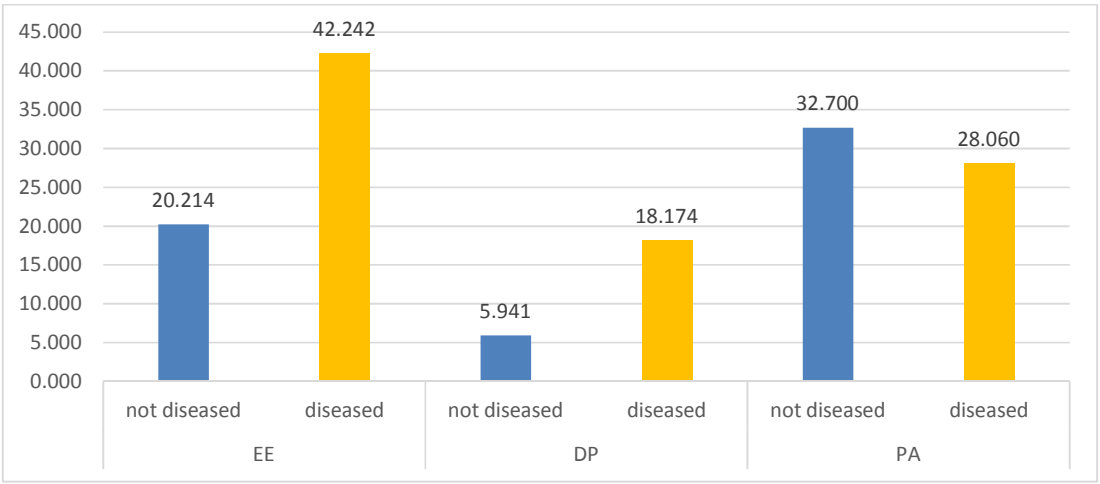


Fig. 2. Comparing Diseaded with non-Dis b their Means

3.4 Assess the Significance of the Association between 3 Components of BOS and Risk Factors

By using logistic regression to assess the relation between BOS components and the risk factors that we gathered from the residents.

So, we assessed the relation between many risk factors and being a high depersonalized, we found that there is a significant relation with these risks, an average number of on-calls per month (p< .0001), working in weekends (p= .028), we found also that the residents who are from Eastern Region are significantly highly depersonalized (p= .047). But if we look at the level of the trainees, we have found that those who are significantly high depersonalized those who are at the second and fourth levels of the program, (R2, p= .029) (R4, p= .006). Also, the presence of sleep disorders (p= .0001) and those who didn't do exercises (p= .003).

Regarding Emotional Exhaustion, we found that the risk factors which significantly associated with high EE are, number of on-calls per month (p= .015), daily working hours (p= .017), south and central regions (p= .000) (p= .001) respectively, pediatrics specialty (p= .003), having any sleep disorder (p= .000) and those who didn't do exercises (p= .000).

Regarding Personal Accomplishment, we also found that the risk factors which significantly associated with low PA are, working during weekends (*p*= .008), having any sleep disorder (*p*= .000), and those who didn't do exercises (*p*= .003).

MBI scale was significantly affected by exposure to harassment (*p* = .03) OR 1.8 (95% CI= 3.1, 1.1) and discrimination (*p*= .01) OR 2.05 (95% CI= 3.5, 1.2). The BOS was also related to smoking (*p*= .026) OR 1.77 (95% CI= 2.9, 1.1). (Table 8).

4. DISCUSSION

Burnout syndrome is the predominant psychological syndrome among residents and general practitioners due to exposure to chronic and high stress at work. It is characterized by the loss of emotional, mental, and physical energy due to high and long-term levels of stress at work. It is defined as a combination of three elements [17].

Decades of research have examined burnout syndrome as a phenomenon in the workplace. The growing demand for health services in today's digital and industrial age has raised concerns among stakeholders and researchers around the world to explore the burnout syndrome of healthcare professionals. Although global expansion efforts have mainly highlighted the burden of depletion on health workers, information from Saudi Arabia has been limited. this preliminary investigation aimed to examine the occurrence of the prevalence of burnout syndrome and its associated factors among Saudi board residents in KSA.

Table 8. Assess the significance of the association between 3 components of BOS and risk factors

Associated Factors	Sig.		
	DP	EE	PA
Age	.484	.623	.354
Number of children	.491	.154	.790
Average number of on-calls per month in the last 6 months	**.000 ***	**.015 ***	.255
How many weekends do you work per month in the last 6 months?	**.028 ***	.201	**.008 ***
What is the average daily working hours you worked over last year?	.336	**.017 ***	.439
Monthly Income	.190	.733	.477
[region= Southern]	.539	**.000 ***	.640
[region= central region]	.522	**.001 ***	.105
[region= Eastern]	**.047 ***	.092	.071
[region= Western]	.	.	.
[specialty= Family Medicine]	.818	.254	.370
[specialty= Internal Medicine]	.317	.563	.504
[specialty= Pediatric]	.572	**.003 ***	.245
[specialty= Surgeries]	.264	.063	.253
[specialty= Others]	.	.	.
[Level= R1]	.057	.240	.223
[Level= R2]	**.029 ***	.535	.380
[Level= R3]	.064	.248	.052
[Level= R4]	**.006 ***	.636	.082
[Level= R5]	.	.	.
[BMI= Normal]	.721	.285	.771
[BMI= overweight]	.762	.613	.916
[BMI= Obese]	.	.	.
[Marital Status= Married]	.807	.327	.854
[Marital Status= single]	.999	.757	.786
[Did you consume any type of smocking in last year= yes]	.078	.054	.282
[Did you consume any type of smocking in last year= No]	.	.	.
[Do you have any sleep disorders= yes]	**.000 ***	**.000 ***	**.000 ***
[Do you have any sleep disorders= No]	.	.	.
[Do you exercise= yes]	**.003 ***	**.000 ***	**.003 ***
[Do you exercise= No]	.	.	.

The current findings stated that More hours of work and more working days a week contributed significantly. Interns and graduate students were fired more than consultants. More than a shocking discovery, exhaustion is an inevitable side effect of a profession that has always enchanted the myth of invulnerability and the survival of the fittest. This educational system promoted rewards for selflessness and professional performance, despite the enormous pressure on job performance.

The current study showed that Emotional Exhaustion was comparatively high (n=199, 53.9%). This is due to Health is an emotionally demanding job that requires empathy. Health professionals (HCPs) are sensitive to emotional exhaustion and feelings of separation from the profession. This finding is consistent with the other studies wherein Japan, 225 physicians have been reported to be emotionally exhausted, 11% with high depersonalization, and 62% with decreased personal accomplishment [18].

The current study showed that Depersonalization was found to be high (n=185, 50.1%). This finding is consistent with other Studies with family physicians in Europe have shown 43% EE, 35% DP, and 32% reduced PA. The overall burnout among Saudi physicians has been reported to be 25.2%, with 69.5% physicians emotionally exhausted, 26% depersonalized, and 12.2% of physicians felt the lack of personal accomplishment [19].

The current study finding showed that Staff-wellbeing program/clinic in your training center are not available (n=271. 77.7%) which are consistent, but if we look at the level of the trainees, we have found that those who are significantly high depersonalized those who are at the second and fourth levels of the program, we expect that the reason for this most likely, is the presence of the first and second part tests at the end of those two years.

Concurrently, variations in the prevalence rates of burnout could be attributable to the utilization of different measurement techniques or study tools across different studies used in different populations or settings, alarming possible threats to validity, and overestimates when these instruments are adapted cross-culturally to measure burnout.

5. CONCLUSION

There is a high rate of burnout among doctors of internal medicine. Significant correlation factors were working hours and the number of working days per week. Trainees reported the highest frequency of burnout. Multidimensional interventions, which can target a wide range of burnout triggers, incorporating various therapeutic tools, can help reduce burnout rates in healthcare providers.

6. RECOMMENDATIONS

- Through this current study, we found that the awareness of the trainees with Burnout syndrome is limited, and the percentage of trainees who are not aware of the presence of clinics or a support program is large, so we recommend that the scope of awareness be expanded to include all trainees in all regions of the Kingdom of Saudi Arabia using different methods to raise awareness of them regarding BOS.
- We also found, through this study, that a large percentage of nearly half of the respondents were exposed to harassment and discrimination, and thus require to activate the regulations and policies approved by the Saudi Commission for Health Specialties and educating the trainees regarding their rights.
- We have noticed through the analysis of data that the percentage of obesity among the trainees reached 21.4% while there are approximately 64.5% who do not exercise, and this may be due to the limited time of doctors trained in the programs, in contrast, we also found that the percentage of smokers exceeded 32% and this is a large percentage among doctors, and we recommend that there should be implement studied appropriate solutions to solve these problems.

CONSENT

As per international standard or university standard, respondents' written consent has been collected and preserved by the author(s).

ETHICAL APPROVAL

The study was approved by the Ethics and Scientific Research Committee at the Research Deputy of King Fahad Medical City, Riyadh, Saudi Arabia.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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