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Impact of Burnout on Self-Reported Patient Care among Resident Physicians in Suez Canal University Hospitals

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ABSTRACT

Background: Emotional exhaustion (EE), depersonalization (DP), as well as a diminished sense of personal accomplishment (PA) was identified as the three subscales defining the burnout syndrome, all of which contribute to a person's inefficiency on the job. More than half of all physicians experience severe burnout.

Objectives: The aim of the current study was to evaluate burnout rates among resident physicians in Suez Canal University hospitals and to evaluate their relationship with self-reported suboptimal patient care practices.

Subjects and methods: A convenience sample of 150 hospital resident physicians was used for the present cross-sectional study. Six items relating to self-reported suboptimal patient care practices as well as the Maslach Burnout Inventory were used to collect data.

Results: Nearly two-thirds of the participants fulfilled the diagnostic criteria of burnout. Prevalence of burnout among female physicians was significantly higher than among males (71.3% versus 44.9%), especially in the EE subscale (20.00±1.67 versus 13.8 ±4.22, P<0.000) and DP subscale (22.59±9.22 versus 14.69±10.30, P=0.009). The highest burnout rates were reported among residents in the third year of residency (76.9%). Suboptimal care showed a higher significant report by residents with burnout than non-burnout participants.

Conclusions: Burnout is frequent among hospital resident physicians. Significant effect of burnout on the high occurrence of suboptimal care among hospital residents was observed. Attention should be paid to identifying policies to decrease the occurrence of burnout among the affected groups and to reduce suboptimal patient care.

Keywords: Burnout, Patient care, Hospital resident physicians, Cross sectional study, Suez Canal University.

INTRODUCTION

Emotional exhaustion (EE), depersonalization (DP), as well as a lack of personal accomplishment (PA) was identified as the three symptoms of burnout syndrome, which is characterized by a decline in productivity on the job [(1)]. Emotional exhaustion (EE) refers to subjective feeling of Work-related fatigue. (DP) refers to the Self-protective mechanism as the attempt of separating oneself emotionally from one's work. Having a low PA means you are upset and frustrated with your level of professional success [(2)]. Burnout is not the same as stress, but it may be a response to unrelenting stress depending on hard demands [(3)]. On the other hand, burnout syndrome is an extended reaction to chronic stressors that are linked to job [(4)]. It has a negative effect on patient care as well as medical staff; more medical errors were reported by physicians with high burnout levels. Hence, physician burnout has received substantial attention [(5)].

Burnout often stems from one's own job, but its etiopathogenesis is multifactorial. Multiple external factors such as high demand at work and time pressure, and internal factors such as high (unrealistic) self-expectation and perfectionism, may lead to Burnout [(6)].

High degrees of burnout are reported by nearly half of all physicians across all specialties, demonstrating how widespread the problem is; over 60% of American physicians in the field of emergency medicine are burned out [(7)]. Another cross-sectional study was held in Qalubia Governorate, Egypt, and carried-out on 76 physicians in El Kanater El Kharaia distract PHC units and centers reported that nearly 66.7% of the general practitioners (GPs) and 26.7% of physicians had high degree of burnout [(8)].

Burnout is associated with physicians' mental fatigue [(9)] since excessive levels of burnout may have an adverse effect on the quality of care physicians can give their patients. More resident physicians reported providing suboptimal care to patients due to burnout [(10, 11)]. It is unclear whether or not burnout is linked to suboptimal patient care amongst Egyptian residents.

The aim of the current study was to identify resident physicians' levels of burnout at hospitals of Suez Canal University and to analyze their relationship with their self-reported patient care practices.

SUBJECTS AND METHODS

A cross-sectional study was carried-out on 150 resident physicians at work in the Hospital of Suez Canal University (SCU) in the Egyptian governorate of Ismailia, between July 2018 to December 2018.

Participants: The resident physicians at work in SCU Hospitals with their duty equal to or more than 12 hours per day and at work at the time of data collection were involved in the study.

Sample size: All resident physicians in SCU Hospitals were included in the study and responded to the questionnaire, counted 150 residents (49 Males and 101 Females; 64% were first-year residents, 38% were second-year residents, and 48% were in their third year of the residency training program. All specialties were included under 6 main groups: Emergency Medicine,

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Anesthesiology, Internal Medicine, Surgical departments, Pediatrics, and Obstetrics and Gynecology.

Instrument:

A three parts questionnaire was used. The first part included the personal data: gender, specialty, and residency year. The second part included an English form of the Maslach burnout inventory-Human services survey (MBI-HSS) questionnaire which is a standard tool for measuring burnout. The questionnaire consisted of 22 MBI-HSS questions to assess burnout, with 9 items related to the EE scale, 8 items related to the PA scale, as well as 5 items related to the DP scale. Each subscale's final score was determined by adding the individual item scores together. Medical professionals' burnout was classified as high, moderate, or low based on established cutoffs. Greater scores on the EE, as well as DP subscales, suggest a greater burden of burnout symptoms, while lower scores on the PA subscale suggest a greater burden of burnout symptoms. An individual was considered to fulfill the study criteria for burnout if he or she had a "high" score on one or more of the three subscales included in the burnout group [(12)]. The criteria for the presence of burnout syndrome were defined as having a score of ≥26 for EE subscale, ≥9 for DP subscale, and/or ≤36 for PA subscale [(12)].

The third part of the questionnaire included 6 statements evaluating Self-reported patient care. These questions were derived from a prior study of residents' opinions regarding their own patient care. Common patient care practices in emergency medicine were incorporated into the statements by a group of board-certified resident physicians: (Q1) "I admitted or discharged patients to make the emergency department (ED) more manageable;" (Q2) "I did not fully discuss treatment options or answer a patient's questions;" (Q3) "I ordered more laboratory or radiology tests because I was so busy;" (Q4) "I did not treat a patient's pain in a timely manner;" (Q5) "I did not communicate important information during handoff to an emergency department colleague or admitting service;" and (Q6) "I did not discuss a patient's treatment plan with the patient's appropriate nursing or ancillary staff." Resident physicians were asked on how frequently they had engaged in such suboptimal practices throughout the previous year.

Data collection: Data were collected by personal interviews using a designated questionnaire. Every questionnaire was examined to ensure that it had been filled out correctly and completely.

Data processing and analyses: Burnout was measured through the Maslach Burnout Inventory (MBI), a 22-item questionnaire that is a standard tool for measuring burnout. Self-reported patient care was evaluated by 6 statements adapted from previous study that examined self-reported patient care amongst resident physicians.

Data quality management: The quality of the data was protected throughout every step of the processing, analysis as well as interpretation process.

Ethical Consideration:

This study was ethically approved by the SCU medical college Research Ethics committee [Reference #3216]. The study was done through the collection of data using a questionnaire and all the participants were informed about the objectives of the study; neither any intervention nor any invasive procedures were undertaken. This study was executed according to the code of ethics of the World Medical Association (Declaration of Helsinki) for studies on humans.

Statistical analysis

The collected data were introduced and statistically analyzed by utilizing the Statistical Package for Social Sciences (SPSS) version 18 for windows. Qualitative data were defined as numbers and percentages. Chi-Square test and Fisher's exact test were used for comparison between categorical variables as appropriate. Quantitative data were tested for normality by Kolmogorov-Smirnov test. Normal distribution of variables was described as mean and standard deviation (SD). Independent sample t-test and analysis of variance (ANOVA) were used for comparison between groups. P value ≤0.05 was considered to be statistically significant.

RESULTS

All the distributed questionnaires were completed and collected. Nearly one-fourth (23.3%) of the participants were involved in the anesthesia and emergency specialties (table 1).

Table 1: Distribution of participated resident physicians by gender and residency

Characteristics	Total 150	
	No.	(%)
Gender		
- Male	49	32.7
- Female	101	67.3
Residency year		
- First	50	33.3
- Second	48	32
- Third	52	34.7
Residency specialty		
- Internal Medicine	46	30.7
- Pediatrics	12	8
- General surgery	42	28
- Ob & Gynae	10	6.7
- Anesthesia	21	14
- Emergency	14	9.3
- Family Medicine	5	3.3

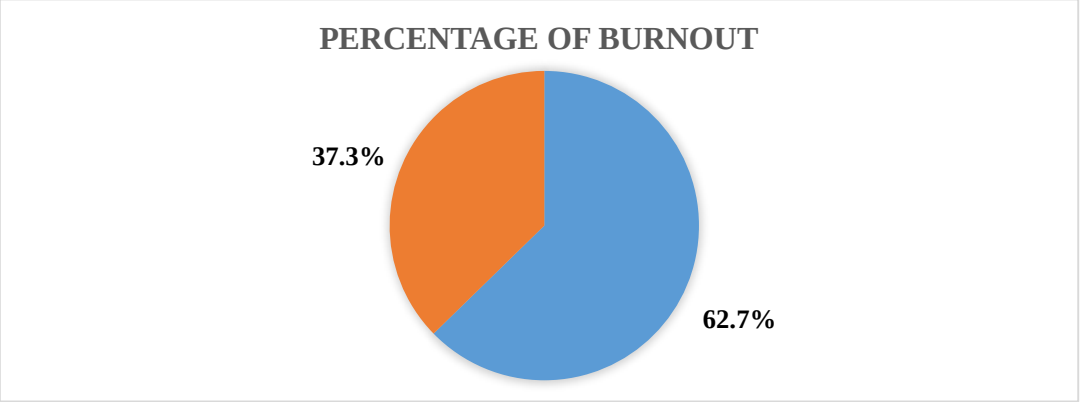

Figure 1: Percentage of burnout among participated resident physicians (N=150)

Figure 1 showed that out of the total surveyed physicians, 94 (62.7%) participants fulfilled the diagnostic criteria of having burnout syndrome.

In **table 2** the occurrence of burnout among the participated hospital resident physicians was significantly higher among female physicians than male ones, with a statistically significant difference among. A positive significant association of burnout among participated residents was detected with increasing residency years (P= 0.027). Considering residency specialty, the highest occurrence of burnout was reported by emergency resident physicians (85.7 %) followed by the reports of anesthesia and general surgery specialties (76.2%, and 73.8 % respectively).

Table 2: Distribution of burnout among participated resident physicians by gender and residency year and specialty

Characteristics	Burnout	No burnout	Significance test (P-value)	
	No. (%)	No. (%)		
Gender				
-Male	22 (44.9)	27 (55.1)	X= 9.821	
-Female	72 (71.3)	29 (28.7)	P= 0.002	
Residency year				OR:
-First	28 (56)	22 (44)	X^2= 4.887	1
-Second	29 (60.4)	19 (39.6)	P= 0.027	1.2
-Third	40 (76.9)	12 (23.1)		2.6
Residency specialty				
-Internal Medicine	24 (52.2)	22 (47.8)	X^2= 2.398	
-Pediatrics	6 (50)	6 (50)	P= 0.121	
-General surgery	31 (73.8)	11(26.2)		
-Ob & Gynae	5 (50)	5 (50)		
-Anesthesia	16 (76.2)	5 (23.8)		
-Emergency	12 (85.7)	2 (14.3)		
-Family Medicine	1 (20)	4 (80)		

Burnout subscales.

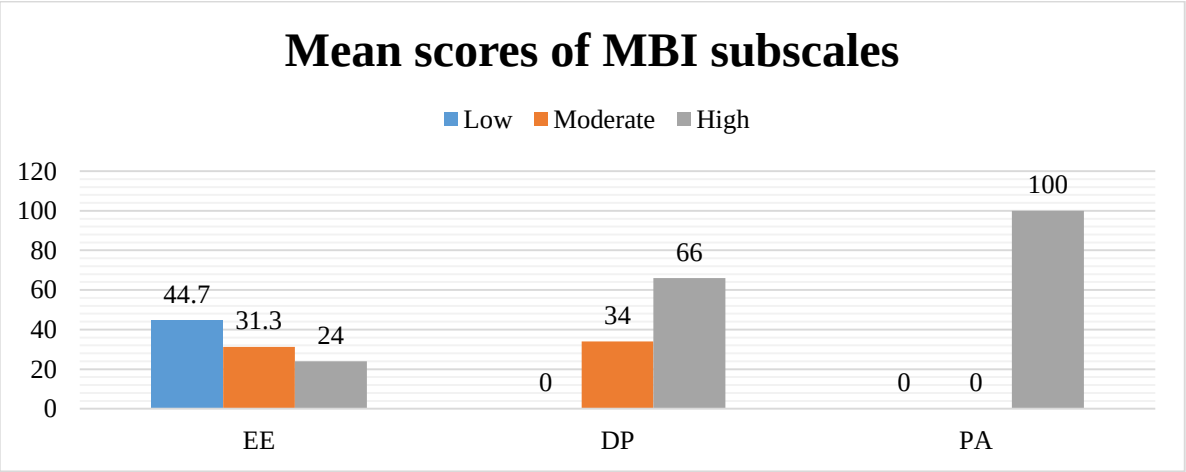

Figure 2: Percentages of burnout among participated resident physicians (N=150).

Figure 2 illustrates the mean scores of the three subscales of burnout. They showed moderate mean scores for the subscales of EE and DP (20.68, and 24.9 respectively), and the third subscale PA showed a high mean score (23.13).

In **table 3**, the EE burnout subscale showed significantly higher mean scores among female resident physicians (20.0±1.67) than among males (13.8±4.22) [P=0.001]. Resident Physicians in the third year of residency showed higher mean EE scores (20.8±5.00) than those in the first and second years, with insignificant differences in between. This table also pointed out that emergency residents had the highest mean EE score (29.4±5.1) along with all specialties with a significant difference among them (P=0.001).

Regarding the DP burnout subscale, a higher mean score was reported among female physicians (22.59±9.22) compared to males (14.9±10.3) with a significant difference (P=0.039). Also, there was a higher DP mean score among physicians in their third year of residency (21.2±4.1) than first and second years (18.6±5.4 and 20.5±3.5, respectively) with a significant difference among them (P=0.009).

Our findings showed that the anesthesia and emergency residents reported the highest DP score (29.7±8.9 and 29.5±5.1, respectively) among all specialties with a significant difference among them (P=0.0636).

Regarding the PA subscale, a lower mean score was reported among female physicians (27.0±10.5) in comparison to males (28.9±9.4) with a significant difference (P=0.002). General surgery residents reported the lowest scores among all specialties followed by emergency residents (28.0±2.4 and 26.2±3.6, respectively). Emergency physicians reported the highest scores in the subscales of EE and PA.

Table 3: Distribution of mean scores of MBI subscales among participated resident physicians.

Characteristics	Mean scores		
	EE Total Mean (20.68)	DP Total mean (20.96)	PA Total mean (23.13)
Gender			
-Male (49)	13.8±4.22	14.9±10.3	28.9±9.4
-Female (101)	20.0±1.67	22.6±9.2	27.0±10.5
---	P=0.001	P=0.039	P=0.002
Residency year			
-Year 1 (50)	20.0±3.6	18.6 ±5.4	19.9±4.4
-Year 2 (48)	20.0±4.13	20.5±3.5	16.1±3.2
-Year 3 (52)	20.8±5.00	21.2±4.1	16.8±4.3
---	P=0.556	P=0.009	P=0.064
Residency specialty			
-Internal Medicine (n=46)	15.0±1.3	9.1±3.3	19.1±3.3
-Pediatrics (n=12)	18.5±3.1	12.9±3.1	23.0±3.1
-General surgery (n=42)	21.9±6.2	27.9±7.2	28.0±2.4
-Obst & Gyn (n=9)	17.8±2.4	17.2±6.4	20.5±5.6
-Anesthesia (n=22)	27.5±3.3	29.7± 8.9	21.7±4.4
-Emergency (n=14)	29.4±5.1	29.5± 5.1	26.2±3.6
-Family Medicine (n=5)	19.0±3.4	9.6±3.7	22.0±3.8
---	P=0.001	P=0.001	P=0.001

In **table 4** the current study assessed the effect of burnout on self-reported suboptimal patient care. The responses showed that nearly half of the participants reported "yes" to the item "I did not treat patient pain in a timely manner), participants with burnout showed a significant difference (P=0.042). Among the most common positive responses to the occurrence of suboptimal care were the responses to questions about communication (5 and 6). Positive responses to question 5 were 47%, and the responses to question (6): was reported by 34.3% of participated residents. The difference was significantly higher among burnout participants.

Table 4: Correlation of burnout dimensions and suboptimal care practices of participated resident physicians (N=150).

Statements Errors	Total Weekly suboptimal care N=150	Burnout N=94	No burnout N=46	P-value X^2
Q1. I admitted or discharged patients to make the department more manageable	47 (31.1%)	38 (67.9%)	9 (19.1%)	0.002 9.67
Q2. I did not fully discuss treatment options or answer a patient's questions.	51(34%)	32 (62.8%)	19 (37.3%)	0.205 1.61
Q3. I ordered more laboratory or radiology tests because I was so busy.	51(34%)	42 (82.4%)	9 (17.6%)	0.001 1.80
Q4. I did not treat a patient's pain in a timely manner.	74 (47.3%)	40 (54.7%)	34 (45.9%)	0.042 4.14
Q5. I did not communicate important information during the handoff to an emergency department colleague or admitting service.	71 (47%)	36 (50.7%)	35 (49.3%)	0.004 8.25
Q6. I did not discuss a patient's treatment plan with the patient's appropriate nursing or ancillary staff.	65 (43.3%)	53 (81.5%)	12 (18.5%)	0.001 41.36

DISCUSSION

The purposes of this study were to investigate the prevalence of burnout within resident physicians at Suez Canal University Hospitals and determine how burnout affects the quality of care that these physicians report providing for their patients.

An over-all of 150 participated hospital resident physicians were evaluated for the presence of burnout syndrome using the MBI and based on the three main dimensions of burnout: EE, DP, as well as low PA achievement, the score was divided into low, moderate, as well as high.

The present study results demonstrated that 62.7% of participants had experienced burnout at the time of the study. This result is consistent with the findings of the other Egyptian studies [13,14].

concerning the occurrence of burnout and gender, the findings showed a significantly higher burnout occurrence among female physicians than among male ones (71.8% versus 44.9%), (P=0.001), which is agreed with **Spataro *et al.*** [15] who found nearly the same ratio (30% versus 15%). The findings highlighted that females had significantly greater scores than males in two subscales of burnout (EE subscale; 20.0±1.67 and 13.81±4.22, respectively, P=0.001) and (DP subscale; 22.59±9.2 and 14.96±10.3, respectively, P=0.009), as proved by **Iorga *et al.*** [16] who found that regarding the EE and DP factors, males had lower scores in comparison with females (EE, 18.73±13.48 versus 24.14±11.71; DP, 5.97±5.45 versus 7.70±5.29), while the current study and **Iorga *et al.*** [16] affirmed that higher sense of PA was found among male physicians without significant difference (male 28.9±9.39 versus female 27.00±10.51, P=0.275). This conclusion might be because women, who often have more duties outside of residency, are more likely to worry about striking a healthy work-life balance. As residency often begins in the 3rd decade of life, women residents may feel more time pressure than men about family planning during the time of residency.

In this study, burnout was compared with residents' years in the three-year clinical residency program, the finding indicated the highest significant burnout rates reported by residents in the third year of residency (76.7%, P=0.003).

Third year residence recorded the highest scores in EE and DP subscales, as well as low score in PA subscale, with no significant difference in EE and PA scales, which agrees with the findings of **Cambell *et al.*** [17] who observed that 72% of physicians residents at the University of Colorado kept going to be burned out throughout their 3 years of training, defining this as persistent burnout, and with the findings of **Ratnakaran *et al.*** [18] who observed that as the total number of years of residency raised, the burnout also raised; the first-year residents experienced the least while the third-year residents experienced the highest prevalence of persistent burn.

Regarding 2nd year residents, they reported the second highest scores in EE and DP subscales, as well as low score in PA, While **Turgut *et al.*** [19] observed that the second-year residents had a higher mean EE score than the fourth-year residents, this difference was not statistically significant. The second-year residents' DP score was also statistically higher than those of the third- and fourth-year residents. On the other hand, **Goldhagen *et al.*** [20] detected that among Duke University residents, the burnout rates were the highest among residents in their first year of residency, supposing that they face more stress than whom at higher years. There was significant difference among the three years in Depersonalization scale with the

highest score for 3rd year residents, with no further statistical significant differences were detected concerning other MBI dimensions, and this is consistent with Turkish study in 2016 that revealed significant differences only in DD dimension [19].

The score of burnout has been compared with the resident`s specialty in the current study, and the results highlighted that Emergency Medicine resident physicians have the highest score among all residents in other specialties, followed by General Surgery, then Anesthesia in the three burnout domains which is accepted with **Estryn *et al.*** [21] Studies showed that burnout was common among French physicians, especially in emergency departments (42.4% and 51.5%, respectively), **Erdur *et al.*** [22] provided evidence showing a correlation between burnout and the severity of violent incidents experienced by emergency room doctors. The investigators found statistically significant correlations between EE and both total as well as verbal violence (P values 0.012 and 0.016, respectively); and among depersonalization and both types of violence (P values 0.021 and 0.012).

A study conducted on Health Care Professionals in Bahrain, Egypt, Jordan, Lebanon, Palestine, Saudi Arabia and Yemen revealed extensive range of prevalence estimates for the three MBI subscales, high EE (20-81%), high DP (9.2-80%), as well as low PA (13.3-85.8%) among physicians and that burnout levels of GPs, residents as well as specialists were higher in comparison with other medical professions [23]. This result is not agreed with A. **Zubairi *et al.*** [24] who discovered that radiology residents had the highest score of burnout (100%) followed by surgery and its allied (68%), and this difference mostly due to higher workloads, crowding index and exposure to aggression, violence or witness the death of patients, or contributing in resuscitation is emotionally and physically difficult. This is proved in the current study in which highlighted that emergency residents had the highest EE among all specialties.

It should be mentioned that anesthesia resident had the highest de-personalization score (29.7±8.9) among all specialties, which is consist with a study held in Assiut University Hospitals, Egypt [25]. This is due to the fact that anesthesia residents are frequently asked to assist with work outside of their specialty. Due to the nature of their work following patients in ICUs, it is often treated as an emergency. The surgical residents recorded the highest score of high sense of PA (28.0±2.4), this result came in agreement with the findings of S. **Abdulaziz *et al.*** [26] in their study, and this was predicted due to their daily leader, life threatening decisions in operative rooms.

The current study assessed the effect of burnout on self-reported patient care, 6 questions were asked about the suboptimal patient care, items related to communicate important information during handoff an emergency department colleague or admitting service showed the highest frequency of weekly self-reported patients' suboptimal care (31%) and responses to question on "not discussing the treatment strategy of the patients with their relatives were committed weekly by 34% of participants Q4. was reported by nearly half of the participants (49.3%) which is in conformity with **Lu *et al.*** [10] who find that EP burnout was substantially correlated with greater frequencies of self-reported suboptimal care.

The study highlighted the suboptimal patient care among ER residents as they recorded the highest rates of burnout, and it should be mentioned that among all Emergency Medicine residents (71%) practice weekly suboptimal patient care related to not discussing the treatment strategy of the patients with their suitable nursing or ancillary team followed by admitting or discharging patients to make the emergency department under control.

CONCLUSIONS

The present study confirmed the occurrence of burnout among hospital resident physicians; result showed that nearly two thirds of the participants fulfilled diagnostics criteria of burnout. Female participants showed significantly higher rates than the male one especially in the EE and DP subscales. The results confirmed the significant highest burnout rates among residents in the third year of residency especially in DP subscale and among the residents in the specialties of emergency, and anesthesia. The finding reported the significant effect of burnout on the high occurrence of suboptimal care among hospital residents. Based on these findings, attention should be paid to addressing the high prevalence of burnout among hospital resident physicians especially of emergency and anesthesia specialties and to identify policies to reduce occurrence of suboptimal care.

DECLARATIONS

- **Consent for publication:** I attest that all authors have agreed to submit the work.
- **Availability of data and material:** Available.
- **Competing interests:** None.
- **Funding:** No fund.
- **Conflicts of interest:** no conflicts of interest.

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