



Burnout and Associated Factors among Iranian Emergency Medicine Practitioners

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Abstract

Background: Emergency physicians are at risk of burnout, which can affect their mental health, as well as patient care. We assessed burnout level among Iranian emergency physicians and investigated demographic, work-related factors and stressors associated with higher burnout.

Methods: In a cross-sectional study, we surveyed all 188 emergency medicine residents and practitioners in Iran. We measured burnout using 22-item Maslach Burnout Inventory assessing emotional exhaustion, depersonalization and personal accomplishment, also demographic factors, work related factors and sources of stress in emergency department using anonymous self-administered questionnaire. Descriptive analysis, univariate analysis to evaluate association with higher score of burnout, and multivariate logistic regression analysis to predict high burnout in 3 subscales was performed.

Results: Totally, 165 questionnaires were filled (response rate: 88%; mean age: 33.6 years, 91% male). Mean burnout scores were 22.94 for emotional exhaustion (95% CI=20.78-25.01; moderate), 9.3 for depersonalization (95% CI=8.24-10.36; moderate to high), and 31.47 for personal accomplishment (95% CI=29.87-33.07; moderate to high). Frequent reported sources of stress were shortage of equipment, problem with work physical environment, and relationship with other services. All 19 sources of stress were associated with higher score of emotional exhaustion and depersonalization; while twelve out of 19 were significantly associated with lower level of personal accomplishment. In logistic regression model, the significant predictors for high emotional exhaustion were work overload, feeling of insecurity for future career and difficulties to balance professional and private life.

Conclusion: Burnout is high among Iranian emergency medicine practitioners and some interventions can be proposed to reduce stress.

Keywords: Burnout, Occupational stress, Emergency medicine

Introduction

Background and importance: Some of the frequently reported possible consequences of burnout among emergency medicine practitioners are decreased career satisfaction, low job performance and high prevalence of mental problems such as anxiety, depression, and suicide are (1-5). Furthermore, in residency training programs, burnout re-

duces the quality of residents' education by decreasing motivation and job involvement, and leads them to leave their career (6, 7).

Burnout is defined as a state of excessive physical, emotional, and mental fatigue and frustration caused by chronic involvement in emotionally demanding situations (8). It can be measured reliably

by the Maslach Burnout Inventory, in its three subscales: emotional exhaustion (feeling of being emotionally exhausted and tired with work), depersonalization (an impersonal feeling about clients which leads to a callous or dehumanized perception towards them), and a low sense of personal accomplishment (decreased feeling of competency and dissatisfaction with one's work) (3, 9). Emergency physicians are reported to have high intensity and unhealthy stress in their work environment (2, 3, 10). Sleep disturbances, high patient load, insufficient administrative support, perceived inadequacy of resources, emergent decision making based on ambiguous information, fear of malpractice and litigation issues are some of the factors associated with burnout among emergency physicians (2, 10). American College of Emergency Physicians (ACEP) has reported five factors as most stressful for emergency physicians: 1) irregular schedule, 2) unreasonable patient demands, 3) fear of making mistakes, 4) threat of malpractice, and 5) problems with nursing staff (2). Kuhn et al reported a model for predicting burnout in emergency physicians and found that high anxiety caused by anticipating bad outcomes is the strongest predictor (11). Some additional factors are reported in residents such as: younger age and low experience, lack of role clarity, economic difficulties, safety issues, dealing with difficult patients, bureaucracy, dysfunctional systems, and political issues (6, 7, 12, 13).

In spite of the significant consequences of burnout, both on emergency physicians themselves and on the quality of care they deliver to their patients, few studies have investigated predictive stressors in burnout development and efficient ways to prevent it.

Emergency medicine is a relatively young specialty in Iran. Since the establishment of emergency medicine residency training program in 2001, no data is available about work related problems of this specialty in Iran. We designed this study to investigate the prevalence of burnout in Iranian emergency medicine practitioners and its correlation with their demographic characteristics and work related factors. We also compared burnout between residents in different years of training

and graduated practitioners. Moreover, we tried to assess a model of stressor predictors of high burnout in our population. Identifying the major predictors of burnout among emergency physicians can be the first step to develop protective strategies.

Materials and Methods

This was a questionnaire-based cross sectional study of all Iranian emergency medicine residents and practitioners. All residents and practitioners of emergency medicine in Iran (except the first and second authors) were eligible for this cross-sectional study (188 physicians). The main part of data (84%) was collected by attending work place of emergency physicians, mainly during their weekly conferences. After a brief explanation about the study purpose, informed consent was obtained, and the participants were then asked to answer the questionnaires. For other practitioners (16%) questionnaires were mailed to their addresses. They were called and after receiving some explanation about the study, were asked to sign the consent form, complete and mail back the questionnaires. Non-responders were called twice in two subsequent weeks. All data was collected in March and April of 2008, to avoid any seasonal bias. All gathered information was confidential, the names and specifications were substituted by unique codes, and participation was completely voluntary. This study was approved by the ethics committee of Tehran University of Medical Sciences in 2008.

A 75-item self-administered questionnaire, comprised of 3 sections was prepared by the authors: The first part was socio-demographic (i.e. age, sex, marital status, smoking, exercise) and work-related items (i.e. resident or not, number of shift hours in emergency department during previous week, mean shift hours per week in previous 6 month, weeks off work in previous year).

A list of all possible stressors was developed based on a review of medical literature and a focus group discussion with emergency medicine residents and practitioners in Tehran University of

Medical Sciences (1-7,10-13). A final 38-item questionnaire was prepared after considering all items. Participants were asked to rate the frequency of experiencing each stressor on a Likert-type scale ranging from 1 (not at all) to 5 (in every shift). Each stressor was written as a statement such as "I am worried about making mistake in my practice" or "terminally ill patients make problem for me". The face validity of the questionnaire was assessed by three experts prior to administration, and it was implemented in a sample of 20 residents of internal medicine, as a pilot study to find and resolve any problem.

The Maslach Burnout Inventory (MBI) was used to measure burnout. MBI has been found to be reliable, valid and easy to use (9). It has 22 statements which measure the three burnout components: Nine for emotional exhaustion (EE), eight for personal accomplishment (PA), and five for depersonalization (DP). Each statement is a sentence like "I feel like I'm at the end of my rope" and participants are asked to rate the frequency of experiencing such feeling on a seven-point scale from "never" (0) to "every day" (6). The score of each subscale is calculated by summing up the scores of its items. High, moderate, or low levels of burnout are determined according to standard cutoffs for medical staff. These three dimensions (EE, PA, DP) cannot be combined and shown in one score (9). The term "burnout" was avoided in the questionnaire and explanation to prevent any bias. The validity and reliability of the Persian translation of MBI has been previously proved by Filian (14). For stressor questionnaire, we tested correlation between all 38 stressor items and combined them based on their correlation coefficient (significant at P -value<0.05, more than 0.5) and their content; making 19 final categories for stressors, explained in the result section.

The three dimensions of burnout were calculated for each participant and ranked as high, moderate, or low. The correlation between demographic and work-related factors with burnout level, also association between stressors with the score of burnout, was investigated using univariate analysis. To find the best model to predict high burnout level, multivariate analysis was performed. Logistic re-

gression model was used to predict level of burnout for each dimension separately (high vs. low or moderate). Only significant factors in univariate analysis (which had significant association with score or level of burnout) were entered in the regression model.

Results

From 188 eligible residents and graduates, 165 participated in this study (response rate: 88%). Some data was missing in different fields. The score for each subscale of MBI was considered as "missing" if only one question related to that subscale has been left unanswered. The descriptive analysis of their demographic characteristics is summarized in Table 1.

Table 2 shows the list of 19 categories of stressors (reduced from a 38-item list), the mean score calculated for each item for all respondents, and for residents and graduates, separately. For all stressors, the stress score for residents was higher than for graduates, except patients' economic problems, from which graduated emergency physicians reported experiencing more stress from.

By comparing stressors scores between the first, second and third year residents and graduated physicians, we found that first year residents reported to experience stress from 8 sources significantly more frequently than other participants, including fear of malpractice, relationship with other services, care of the old or terminally ill patients, insufficient skills, difficulties to balance professional and private life, violence in ED, educational issues (morning reports, teaching rounds, etc.), and having to deal with new technologies. Five items were reported significantly more frequently by first and second year residents in comparison with third year residents and graduated physicians; these included work overload, physical environment at work, shortage of equipment, consultant unavailability, and work related fatigue. Finally, 2 factors were similar in all residents and significantly higher than graduates: insecurity about future career in field of emergency medicine, and text needed to be read overload.

Table 1: Demographic and work-related characteristics of participants

Sex (Number, percentage)	Male	150 (91.5)
	Female	14 (8.5)
Marital Status (Number, percentage)	Married	126 (77.3)
	Single	37 (22.7)
	Life place during work days (Number, percentage)	Alone
	With family	106 (65.8)
Doing Exercise (Number, percentage)	No	99 (61.1)
	0-2 hours weekly	47 (29)
	More than 2 hours weekly	16 (9.9)
Smoking (Number, percentage)	Yes	21 (12.9)
	No	142 (87.1)
Work status (Number, percentage)	1 st year resident	39 (24)
	2 nd resident	44 (27)
	3 rd year resident	26 (16)
	Graduated Practitioner	51 (32)
Age in years, Mean (SD)	33.6 (4.5)	
Hours in ED in last week, Mean (SD)	51.2 (18.9)	
Hours per week in ED in previous 6 months, Mean (SD)	49.2 (16.9)	
Weeks off work in last year, Mean (SD)	1.7 (1.8)	

Table 2: Mean scores reported for work related stressors, based on frequency of experience, listed in descending order in total population. The minimum and maximum possible score for each stressor were 1 (never experiencing) and 5 (experiencing in every shift)

	Origins of stress for emergency medicine practitioners	N	Mean for Residents	Mean for graduates	Mean Score (SD) in total sample
1	Shortage of Equipment	160	4.49	4.02	4.34 (0.95)
2	Physical Environment at work	161	4.21	3.79	4.08 (1.01)
3	Problems in relationship with other services (Medical, nursery, laboratory etc)	159	4.14	3.83	4.04 (1.00)
4	Text needed to be read overload	162	4.23*	3.48*	4 (1.13)
5	Lack of system support and encouragement	159	4.05*	3.64*	3.92 (1.07)
6	Economic problems and future of Emergency medicine as a career	161	3.94*	3.36*	3.76 (1.20)
7	Work related Fatigue	163	3.90*	3.27*	3.70 (1.23)
8	Patients' economic problems	161	3.65	3.80	3.70 (1.20)
9	Patient overload	163	3.91*	3.13*	3.66 (1.13)
10	Difficulties to balance professional and private life	161	3.69	3.21	3.54 (1.06)
11	Fear of malpractice	163	3.64*	3.03*	3.45 (1.11)
12	Educational issues (morning reports, progress notes, educational rounds etc)	157	3.48*	2.52*	3.20 (1.16)
13	Image of emergency medicine in media	163	3.30	2.98	3.20 (1.35)
14	Not enough Skills	162	3.34*	2.72*	3.15 (1.13)
15	Violence in the ED	159	3.22*	2.74*	3.07 (1.14)
16	Care of Old or terminally ill patients	160	3.01	2.80	2.95 (1.06)
17	Consultant Unavailability	161	2.95	2.72	2.88 (1.24)
18	New information and technologies (internet, etc)	163	2.77	2.39	2.66 (1.33)
19	Communication with colleagues	163	1.87	1.78	1.85 (0.97)

* The difference between graduated practitioners and residents' mean score is significant at P -value<0.05.

The number of completely answered questionnaire was 158 for emotional exhaustion (EE), 160 for depersonalization (DP), and 155 for personal accomplishment (PA). The mean score for the EE subscale was 22.94 (SD=13.6; 95% CI=20.78-25.01; range from 19-26 is considered as moderate), the mean score for DP was 9.3 (SD=6.8, 95% CI=8.24-10.36; a score between 5 and 10 is considered as moderate and above 10 is high), and the mean score for PA was 31.47 (SD=9.9, 95% CI=29.87-33.07; scores below 33 is considered low). On individual

level, 39% of the respondents had high depersonalization (95%CI: 31%-47%), 37% had high emotional exhaustion (95% CI: 29%-45%), and 46% had high burnout in personal accomplishment (95%CI: 38%-54%).

Some of the demographic and work-related factors had significant relationship with high level of burnout in each dimension. Table 3 and 4 show the relationship of high burnout in three subscales and these demographic and work related factors.

Table 3: Relative Risk (RR) of demographic and work related factors for high burnout in emotional exhaustion (EE), depersonalization (DP) and personal accomplishment (PA) subscales. ED: Emergency Department

High burnout	EE	DP	PA
Sex: Female	1.05	0.95*	1.06
Marital Status: Married	0.87	0.70	1.51
Life place during Work days: Alone	1.45	1.47*	1.06
Not Doing Exercise	1.18	1.22	1.43*
Smoking	1.34	1.36	1.25
Work status (only 1 st year resident)	2.26*	1.78*	NS
significant RRs are mentioned)			
3 rd year resident	NS	NS	5.08*

*The relative risk is significant at P -value<0.05. NS: Not significant

Table 4: Mean of work and demographic factors in high burnout group in emotional exhaustion (EE), depersonalization (DP) and personal accomplishment (PA) subscales. Mean age is higher for moderate and low DP; and more weeks off work is associated with lower EE and DP

Factor	Mean (SD) in high EE group	Mean (SD) in high DP group	Mean (SD) in low PA group
Age	32.8 (4.22)	32.2 (3.91)*	33.1(4.70)
Hours in the ED in last week	52.7 (18.2)	52.0 (17.5)	50.6(20.3)
Mean Hours in the ED in previous 6 months	51.0 (17.7)	50.8 (17.3)	50.0 (18.1)
Number of Weeks off work in last year	1.3(1.5)*	1.2 (1.51)*	1.5(1.5)

*The mean is significantly different from the mean of low and medium burnout at P -value<0.05.

Table 5 shows correlation between stressors and score of burnout in each dimension. All stressors had a significant relationship with higher score of EE and DP, except for patients' economic problems with DP. Twelve out of nineteen stressors had significant correlation with the lower score of PA subscale; although the strength of correlation between stressors and PA score was lower than of DP and

EE scores. The result of multiple-logistic regression is shown in table 6 for EE. The model was significant for predicting high burnout in this subscales (Hosmer and Lemeshow test P -Value=0.609). The model was also significant for DP; but none of the variables had a significant odds ratio. The model was not significant for PA. The significant predictors for high EE were work overload, economic problems

and insecurity of future career in field of emergency medicine, and difficulties to balance professional and private life. Perception of more stress from new information technologies had a protective effect on

high emotional exhaustion. Together these factors explained 50% of the total variance in reporting a high degree of EE.

Table 5: Correlation between stressors score and burnout score in three subscales; for EE (Emotional Exhaustion) and DP (Depersonalization), higher score means higher burnout; for PA (Personal Accomplishment), lower score means higher burnout

Stressor	spearman's rho for EE	spearman's rho for DP	spearman's rho for PA
Lack of Equipment	0.387**	0.230**	0.058
Physical Environment at work	0.398**	0.310**	-0.205*
Relationship with other services (Medical, nursery, laboratory etc)	0.320**	0.294**	0.045
Text needed to be read overload	0.352**	0.184*	-0.020
Lack of system support and encouragement	0.464**	0.351**	-0.175*
Economic problems and future career	0.530**	0.363**	-0.276**
Work related Fatigue	0.564**	0.364**	-0.126
Patients' Economic problems	0.188*	0.129	0.110
Work Overload	0.581**	0.434**	-0.097
Difficulties to balance professional and private life	0.661**	0.417**	-0.275**
Fear of Malpractice	0.533**	0.422**	-0.277**
Educational issues (morning reports, progress notes, educational rounds etc)	0.463**	0.432**	-0.339**
Image of emergency medicine in public	0.489**	0.464**	-0.248**
Not enough Skills	0.396**	0.264**	-0.267*
Violence in ED	0.424**	0.439**	-0.197*
Care of Old or terminally ill patients	0.488**	0.378**	-0.328**
Consultant Unavailability	0.411**	0.259**	-0.226**
New information and technologies (internet, etc)	0.223**	0.287**	-0.086
Communication with colleagues	0.348**	0.382**	-0.350**

** . Correlation is significant at the 0.01 level (2-tailed).

* . Correlation is significant at the 0.05 level (2-tailed)

Table 6: Significant factors (*P*-Value<0.05) in predicting high level of Emotional Exhaustion

Stressors	Odds Ratio
Excessive perceived stress due to Work overload	3.1
Excessive perceived stress due to Economic problems and future career in of Emergency medicine	2.28
Excessive perceived stress due to Difficulties to balance professional and private life	9.2
Excessive perceived stress due to New information and technologies (internet, etc)	0.56

Discussion

Eighty eight percent of Iranian emergency medicine practitioners and residents were surveyed. The results of this study showed that a high percentage of these physicians are suffering from moderate to high degrees of burnout (56% of on emotional ex-

haustion, 66% on depersonalization, and 78% on personal accomplishment subscale). Other studies from different countries reported almost the same percentage (1, 15, 16); for example a study found 60% of moderate to high burnout in a large population of 1,272 American emergency medicine

practitioners (10). In a nationwide survey in Romania, the level of occupational stress and burnout in emergency medicine professionals was reported to be the highest among all medical specialties (17). Considering the serious adverse effects of burnout on physician's health and job satisfaction, and its effect on quality of care for patients, also new establishment of emergency medicine and possibility for amendment in its future development, it is essential to pay more attention to its predicting factors in order to find ways to prevent it.

The highest percentage of reported burnout is on personal accomplishment level and then depersonalization subscale. More severe burnout on depersonalization dimension has been reported in previous studies on emergency physicians (1, 2, 15). It is suggested that the nature of emergency medicine, which involves a short-term relationship between physician and patient, may contribute to the development of this problem higher depersonalization or it may result from use of this attitude as a protective defense mechanism (2). Some researchers have proposed the probability that some other factors, apart from burnout, may contribute to this negative impersonalized attitude towards patients (18). The importance of this attitude is even more obvious when considering the reports of its association with self-reported sub-optimal care of patients (19).

The feeling of low personal accomplishment among emergency medicine practitioners may reflect the perception of emergency medicine in relation to other specialties, which leads to low satisfaction and sense of not being efficient enough. Since the specialty is very new, this may be a temporary problem that will be resolved in future.

When analyzing the association between high burnout and demographic and work-related factors, results showed that high EE was not associated with any of the demographic factors. However, higher DP was found in men, younger physicians, and those who were living alone. On PA dimension, higher level of burnout was reported in those who did no exercise at all. Generally our results are consistent with previous studies (5, 10), which have reported no relationship between age, gender, and marital status with level of burnout. However,

higher levels of burnout had been reported in those physicians who were smoking and not doing exercise.

Comparing different years of residency, higher level of EE and DP were found in first year and higher level of burnout on PA was seen in third year residents. Higher level of stress in first year of residency had been reported in previous studies (20). On the other hand, third year of emergency medicine residency may be a crucial time for residents to evaluate themselves and get ready to leave education setting and enter job market, where they are supposed to work independently (7). Low sense of personal accomplishment in third year residents may reflect their stress and low self esteem in evaluating themselves.

Interestingly, number of weeks off work is significantly associated with lower level of burnout in EE and DP subscale. Considering no official off weeks has been considered in residency program and curriculum, this may be a required change that may be effective.

Emergency medicine practitioners mentioned 19 categories as origins of stress in their workplace. Overall the strongest stressors were shortage of equipment, problems with work environment, and relationship with other services (including nursery, lab and other medical services). Again, considering the recent establishment of this specialty in Iran, it could reflect the organizational and financial problems of these new departments.

Difficulties to balance professional and private life, work overload and fatigue associated with it, and fear of malpractice had strongest relationship with high EE, while image of emergency medicine in media and perceived stress from violence in emergency department were stronger in physicians with higher DP. There was not a strong relationship between stressors and PA level. Our result is consistent with previous studies which reported anticipated process failure (6), patient load, interaction with patients and families, and lack of administrative support (21), number of shifts per month (10), insufficient staffing and work load (22), economic and financial issues, individual malpractice (23), quality of team work and work-family conflict (24) to have association with high burnout. Generally, these factors were found to create higher score of stress in residents, com-

pare to graduates; this indicates the importance of more support for residents.

Our model for predicting burnout showed that the strongest predictors for high EE were work overload, economic problems and insecurity of future career in field of emergency medicine, and difficulties to balance professional and private life. Interestingly, after controlling for other stressors, participants who perceived more stress in dealing with new technologies had less probability of being highly emotionally exhausted. This may reflect that more available sources of information and technology, or putting pressure on residents to search and use the latest information, can lead to tiredness with work.

In summary, we can list the predictors of high burnout as follow: economic problems, personal life and work overload, and fear of having not enough skills in emergency departments. As a result, any intervention to prevent burnout in our population should focus mainly on these components. Even though the results of our study reflects the situation in emergency physicians and residents in Iran, not only the methodology and approach can be generalized, but also the results can be used to predict and overcome short-comings and problems in establishment of emergency medicine specialty, which is a very new specialty in developing world and expected to grow and be established in other countries in the future. Limitations: Our study is a cross sectional study and cannot assess any change in variables over time. Moreover, it cannot prove cause-and-effect relationship between associated variables. Thus, we could not assess whether, for example, high DP is a result of living alone, or is its cause, as these people prefer to live alone; or it is not clear whether high burnout is consequences of stressors or people who are exhausted and frustrated perceive more stress from the environment.

Although we conducted our study in all Iranian emergency physicians and residents and had a high response rate, our sample size was too small to assess our predictive model of burnout in residents and graduates separately. In addition, because of a small percentage of women practitioners in our study, our results should be regarded with caution in this population.

We used a validated outcome in the Maslach Burnout Inventory, but the predictors have not been similarly validated, although we piloted them and their face validity was checked. Additionally we utilize multivariable logistic regression modeling to evaluate for associations with burnout, but considering the number of predictors, our sample size was inadequate for the number of predictor variables. Therefore, the logistic regression model can be over fit.

Conclusion

Our results suggest an alarming high rate of Burnout; especially in residents in recently established emergency medicine specialty in Iran. Since this is the first study performed to investigate Burnout in physicians and residents in Iran, it can contribute to improvement of health care quality, resident education efficacy and patient satisfaction by preventing Burnout. Our result can also be utilized to adjust the interventions suggested by previous studies in other countries to be more effective in Iranian medical education system.

We also determined some major stressors that interventions can be focused on; these interventions can include improving organizational relationship with other services, stronger financial, emotional and educational support for residents and training them how to make a balance between life and work.

The next step will be evaluating EM residents' and practitioners' personality traits and coping mechanisms used by them in stressful situations and the impact of these factors on preventing burnout.

Ethical considerations

Ethical issues (Including plagiarism, Informed Consent, misconduct, data fabrication and/or falsification, double publication and/or submission, redundancy, etc) have been completely observed by the authors.

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