

# Burnout syndrome among emergency medicine physicians: an update on its prevalence and risk factors

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**Abstract. – OBJECTIVE:** Training in and practising emergency medicine are very stressful conditions that pose a significant emotional burden on physicians, placing them at high risk of developing burnout. The purpose of the current manuscript is to review the published literature on burnout prevalence among emergency medicine physicians and to identify the risk factors associated with its occurrence.

**MATERIALS AND METHODS:** A search of MEDLINE (January 1980-March 2019) was conducted using the terms "burnout", "emergency", "physicians", "emotional exhaustion", "depersonalization" in various combinations. All studies, which assessed burnout prevalence (as primary or secondary outcome) among emergency medicine physicians and were published as full-text articles in English, were included in the review.

**RESULTS:** Twenty-seven studies met eligibility criteria. Although the prevalence of burnout among emergency medicine physicians is high, the exact incidence widely varies ranging between 25% and 77.8%, because of the unique characteristics of each population under study, and also due to the different definitions, tools, and cut-offs used for burnout diagnosis. Several work-related parameters (heavy work-load, low job satisfaction, a problematic co-workers relationship, and difficulty in balancing personal with professional life), personality traits and stress-copying methods, life-style parameters, and other mental disorders (such as stress and sleep disorders) are associated with the establishment of burnout.

**CONCLUSIONS:** Emergency medicine physicians are of a high risk of burnout, although further agreement is needed regarding the use of the Maslach Burnout Inventory as a diagnostic tool. Furthermore, the identification of the potential risk factors for this disorder is crucial so that high-risk groups could be early identified and properly addressed.

*Key Words:*

Burnout, Emergency medicine physicians, Risk factors.

## Introduction

Emergency medicine (EM) is a demanding speciality characterized by a high-intensity working environment, long working hours, and constant variability and unpredictability of clinical cases, which require action to be taken rapidly and precisely<sup>1</sup>. The EM physician should be able to take "life-or-death decisions" for trauma, surgical or medical cases, often having minimal clinical information, and be capable of working as an effective team member. These characteristics, although they make EM a very interesting and attractive speciality, are also the ones that pose a high emotional burden to the physicians involved<sup>2</sup>.

Burnout is a work-related syndrome resulting from prolonged exposure to job stressors<sup>3</sup>. It is more likely to occur when goals and expectations are too high, or reality is too low<sup>4</sup>, resulting in an imbalance between invested and gained resources. Burnout is characterized by emotional exhaustion (EE), depersonalization (DEP), and a reduced sense of personal accomplishment (PA); treating patients and colleagues as objects rather than human beings and feeling emotionally depleted are two very common symptoms of burnout<sup>5</sup>. Current literature indicates that health professionals are of higher risk in developing burnout than the general population<sup>6</sup>. Thus, the aim of the current review is to summarize the published literature regarding the prevalence and associated risk factors of burnout among EM physicians.

## Materials and Methods

A search of MEDLINE (January 1980-March 2019) was conducted. We used the terms "burnout" AND "emergency" AND "physicians"; "emotion-

al exhaustion” AND “emergency” AND “physicians”; “depersonalization” AND “emergency” AND “physicians”. The reference list of all relative articles was also reviewed by the authors in order to identify further studies. Studies that assessed burnout prevalence among EM physicians and were published as full-text articles in English are included in this review.

### **Definition and Prevalence of Burnout**

The prevalence of burnout in published literature widely varies between 25% among physicians in a pediatric emergency department<sup>7</sup> to 77.8% in a study among EM trainees in USA<sup>8</sup>. Table I presents all studies which included EM physicians and reported the prevalence of burnout as primary or secondary outcome, along with the instrument that was used to diagnose this disorder and the criteria which were implemented to identify burnout.

Several reasons can be identified for the discrepancy regarding burnout prevalence. The first one is that these studies were conducted in various countries, which are characterized by several dissimilarities in the organization of the health system and emergency departments. From the 27 studies included in the current review, 14 were conducted in the USA<sup>2,7,8,9-19</sup>, 2 in the rest of America<sup>20,21</sup>, 3 in Europe<sup>22-24</sup>, 1 in China<sup>25</sup>, 5 in the rest of Asia<sup>26-30</sup>, and 2 in Africa<sup>31,32</sup>. However, limitation of health resources, differences in the availability of EM physicians, and the accessibility of emergency departments, and dissimilarities in the number, the available sub-specialities and level of experience of the rest of the emergency department personnel, that could be seen between countries, are only some factors which could produce significant differences in the overall working environment in the emergency departments, imposing less or more psychological burden on the employed physicians.

Another reason for this variation might be that burnout was evaluated in different populations. Most of the studies report that EM physicians were evaluated, but no discrimination is made based on the specific working relationship or the ratio of EM residents and specialists included. In the 7 studies that were conducted on either EM residents or trainees<sup>8,13,14,16-18</sup>, the incidence of burnout ranged between 53.4%-77.8%. In the study of Soltanifar et al<sup>29</sup> the prevalence of burnout was estimated only among female EM physicians working in Iran, and high levels of burnout (up to 84.5% in the emotional exhaustion feature) were found. On the other hand, Patterson et al<sup>7</sup> reported a low level of 25% burnout

among physicians working in an emergency pediatric department. Thus, when evaluating the burnout incidence, the specific characteristics of the studied population and of the emergency department, where the physicians are employed, should be taken under consideration.

However, the most important reason for this discrepancy in burnout incidence is the variable tools, and especially definitions, that have been previously used to diagnose its establishment. The Maslach Burnout Inventory (MBI), which was developed by Maslach and Jackson<sup>33</sup>, is probably the most frequently applied tool to diagnose burnout among health care providers. It comprises 22 self-completed items, evaluating the presence of burnout in three subscales, which are emotional exhaustion (EE), depersonalization (DEP), and sense of personal accomplishment (PA). In the Inventory, 9 items (namely 1, 2, 3, 6, 8, 13, 14, 16, 20) are utilized for the calculation of EE score, 5 items (namely 5, 10, 11, 15, 22) are used to calculate DEP score, while the remaining 8 items (4, 7, 9, 12, 17, 18, 19, 21) are used to calculate the PA score<sup>34</sup>. A 7-level Likert-type scaling method is applied to score the frequency of each one of the 22 items from 0 (never) to 6 (daily). The EE and DEP subscales are graded similarly, while the PA subscale is an inverse one.

As a general principle, high EE score, high DEP score, and low PA score indicate burnout (or high risk of burnout)<sup>33</sup>; however, there is not a common consensus on the accurate definition of the cut-off points between these degrees of each dimension. According to MBI Manual<sup>33</sup>, the cut-offs being used to define the degree (high, average, or low) corresponding to each dimension of burnout are the followings: EE: high  $\geq 27$ , average: 26-17 and low  $\leq 16$ ; DEP: high  $\geq 13$ , average: 12-7 and low  $\leq 6$ ; and PA: high  $\leq 31$ , average: 32-38 and low  $\geq 39$ . Despite this recommendation and because there is no criterion standard definition for burnout, many study authors have defined burnout as a dichotomous variable (burned out or not burned out) and applied other definitions for burnout<sup>19</sup>. Moreover, these initial cut-offs were calculated by splitting the normative population into thirds<sup>35</sup> and authors have previously wondered whether these specific cut-offs are arbitrary; as a consequence several slightly different cut-offs have been used in published literature. To further increase this discrepancy, Maslach Burnout Inventory characterized these specific cut-offs as “problematic”, and removed them from the most recent MBI manual<sup>35</sup>.

**Table I.** Studies which reported prevalence of burnout among emergency medicine physicians and were included in the review.

First Author	Publication year	Country of origin	Population under study	Diagnostic tool	Diagnostic criteria	Burnout prevalence	Cut-off values (when applicable)
Keller et al <sup>9</sup>	1989	USA	77 EM physicians	MBI	High EE or high DEP or low PA.	For each subscale: 29% 60% 16% (alternative prevalences for medium-high scores)	Reference for cut-offs given, but not described in detail
Lloyd et al <sup>20</sup>	1994	Canada	395 EM physicians	MBI	High EE or high DEP or low PA	For each subscale: 13% 61% 44% (alternative percentages for medium-high scores)	High EE ≥ 40; High DEP ≥ 15; Low PA ≤ 36
Doan-Wiggins et al <sup>2</sup>	1995	USA	1317 diplomates of American Board of EM	Self-completed questionnaire	Self-reported	25.2%	N/A
Goldberg et al <sup>10</sup>	1996	USA	1272 EM physicians	MBI	Phases IV-VIII (representing moderate and high degrees) from MBI raw data	60%	Raw MBI data scores converted into phases using a published method
Escrībā-Aguir et al <sup>22</sup>	2006	Spain	353 EM physicians	MBI	High EE High DEP Low PA	For each subscale: 36.5% 38.7% 63.7%	Reference is given for cut-offs, but they are not described in detail
Kuhn et al <sup>11</sup>	2009	USA	193 EM physicians	MBI	High EE or high DEP or low PA	62%	Reference for cut-offs given, but not described in detail
Estrin-Behar et al <sup>23</sup>	2010	France	538 EM physicians	6-item CBI (Copenhagen Burnout Inventory)	High CBI score	51.5%	High score ≥ 3
Shanafelt et al <sup>12</sup>	2012	USA	333 EM physicians	MBI	High EE or high DEP	63%	High EE > 27; High DEP > 10; Low PA < 33
Jalili et al <sup>26</sup>	2013	Iran	160 EM physicians	MBI	High EE or high DEP or low PA	For each subscale: 37% 39% 46%	Reference is given for cut-offs, but they are not described in detail
Hutchinson et al <sup>21</sup>	2014	Jamaica	30 EM physicians	MBI	High EE high DEP or low PA	50%	Reference for cut-offs given, but not described in detail
Koib et al <sup>31</sup>	2014	Egypt	28 EM physicians	MBI	Two out of 3 criteria (high EE, high DEP, low PA)	39.39%	High EE ≥ 27; High DEP ≥ 13; Low PA ≤ 31
Kimo Takayesu et al <sup>3</sup>	2014	USA	218 EM residents	MBI	High EE or high DEP or low PA	65%	Reference for cut-offs given, but not described in detail
Xiao et al <sup>25</sup>	2014	China	205 EM physicians	15-item MBI-GS	High EE or high DEP or low PA	25.4%	High EE > 13; High DEP > 9; Low PA < 30
Lu et al <sup>14</sup>	2015	USA	77 EM attending physicians and residents	MBI	High EE or high DEP	57.1%	Reference for cut-offs given, but not described in detail
Ben-Itzhak et al <sup>27</sup>	2015	Israel	70 EM physicians	MBI	High EE or high DEP	71.4%	Reference is given for cut-offs, but they are not described in detail

**Table 1. (Continued).** Studies which reported prevalence of burnout among emergency medicine physicians and were included in the review.

First Author	Publication year	Country of origin	Population under study	Diagnostic tool	Diagnostic criteria	Burnout prevalence	Cut-off values (when applicable)
Salmirago-Blotcher et al <sup>15</sup>	2016	USA	138 EM physicians	Two-item version of MBI	Not clearly reported	27%	Continuous burnout score for sensitivity analysis
Hamdan et al <sup>28</sup>	2017	Palestine	142 EM physicians	MBI	High EE or high DEP or low PA (diagnosis of high burnout)	For each subscale: 72.3% 32.1% 45.7%	Reference is given for cut-offs, but they are not described in detail
Lu et al <sup>16</sup>	2017	USA	36 EM trainees	MBI	High EE or high DEP	70%	High EE>26; High DEP>12
Lu et al <sup>17</sup>	2017	USA	58 EM trainees	MBI	High EE or high DEP	53.4%	Reference for cut-offs given, but not described in detail
Patterson et al <sup>7</sup>	2017	USA	131 Paediatric EM physicians	MBI	Moderate to high EE and DEP and low-moderate PA	25%	Reference for cut-offs given, but not described in detail
Chernoff et al <sup>24</sup>	2018	Ireland	33 EM physicians	OLBI (oldenburg burnout inventory)	High mean overall score for exhaustion or disengagement	70%	Cut-off value: 2.18
Dyrbye et al <sup>18</sup>	2018	USA	299 EM residents (4 <sup>th</sup> year)	2-item tool from the MBI	High EE or high DEP	53.8%	Reference is given for cut-offs, but they are not described in detail
Lu et al <sup>8</sup>	2018	USA	27 EM trainees	MBI	High EE or high DEP	77.8%	High EE >26; High DEP >12
Rajan et al <sup>32</sup>	2018	S. Africa	93 EM physicians	MBI	High EE or high DEP	For each subscale: 57% 43% (alternative prevalences for medium-high scores)	High EE: ≥27 High DEP: ≥13
SoltaniFar et al <sup>29</sup>	2018	Iran	77 Female EM physicians	MBI	High EE or high DEP or low PA	For each subscale: 42.9% 55.8% 11.7% (alternative prevalences for medium-high scores)	High EE≥27 High DEP≥10 Low PA≤33
Alqahtani et al <sup>30</sup>	2019	S. Arabia	95 EM physicians (including pediatric emergency department)	MBI	High EE and high DEP and low PA (all three criteria)	18.9% (High EE: 81.1%; High DEP: 24.2%; Low PA: 27.4%)	Reference is given for cut-offs, but they are not described in detail
Lin et al <sup>19</sup>	2019	USA	1522 EM residents	MBI	High EE or high DEP	76.1% (alternative prevalences for several criteria)	High EE: ≥27 High DEP: ≥10

The published studies regarding the prevalence of burnout among EM physicians highlight this variance. Several authors have calculated the prevalence of burnout using cut-offs for the three dimensions of MBI, without clearly reporting these specific cut-off values<sup>22,26-28,30</sup>. In other papers cut-offs are well described, but are not identical<sup>12,16,19,32</sup>, as various previous literature has been used as a reference. Moreover, there are studies that reported burnout prevalence separately for each subscale of the MBI<sup>22,26-29</sup>, burnout incidence as high EE or high DEP<sup>12,17</sup>, burnout prevalence calculated as medium-high EE or medium-high DEP<sup>7,10,32</sup>, and finally studies that reported several burnout incidences, based on alternative diagnostic criteria<sup>9,19,20</sup>. To further add diversion in the field, there are authors who estimated burnout prevalence utilizing other than MBI tools, such as the Copenhagen burnout inventory<sup>23</sup> or the Oldenburg burnout inventory<sup>24</sup>, while in the report of Doann-Wiggins et al<sup>2</sup> the prevalence of burnout among EM physicians was self-reported.

In conclusion, the incidence of burnout among EM physicians, although it is high it varies widely. Apart from the different characteristics of the study population, the tools used to diagnose burnout and most importantly the different applied cut-offs of the MBI, produce most of this variation, making comparisons between studies difficult and unreliable. The developers of the MBI argue that this questionnaire was developed as a research tool, not as a diagnostic one. Moreover, the original MBI Manual presents the distribution of scores for its normative samples and divides them into thirds; the scoring range in each third is then used to indicate “low,” “average,” and “high” scores on burnout<sup>33</sup>. Thus, it may be more accurate to use the scores of the MBI subscales as continuous variables, and further define the critical boundaries of high EE, high DEP, and low PA, based on the specific population norm<sup>35</sup>.

### **Risk Factors for Burnout Among Emergency Medicine Physicians**

#### ***Risk Factors Related to Working Environment and Job Satisfaction***

Several risk factors associated with working environment have been previously associated with the occurrence of burnout. In one of the largest studies in the field conducted among 1272 EM physicians in USA, increased number of shifts per month, the lack of job involvement,

dissatisfaction with career, low self-assessment of productivity and effectiveness, dissatisfaction with speciality services, and intent to leave practise within 10 years were all independent predictors of burnout<sup>10</sup>. Similarly, in the study of Jalili et al<sup>26</sup> all 19 common working-related stressors which were evaluated among 160 EM physicians, were associated with burnout. Shortage of equipment, problem with work's physical environment, and relationship with other services were among the most frequently reported<sup>26</sup>, while work overload and a feeling of insecurity for future career were independently associated with EE. Similarly Golberg et al<sup>10</sup> in a 4-year longitudinal study among 1272 EM physicians found that work load (as number of shifts per month), job involvement, and career satisfaction were, among others, independently associated with burnout.

A problematic coworkers relationship is a risk factor for burnout frequently reported in the literature<sup>10,23,26,34</sup>. Emergency workers of different specialities and several physicians (both consultants and trainees) have to present effective teamwork and be facilitated by other hospital services, in order the emergency department to function optimally, a condition which is sometimes difficult to be fulfilled. To this direction, the presence of consultant and his/hers appreciation towards the EM resident was negatively associated with DEP and EE scores in a study among 167 EM residents in Turkey<sup>34</sup>. On the contrary, the presence of violence (physical and verbal) in the emergency department is positively associated with both EE and DEP<sup>28,34</sup>.

The difficulty in balancing professional and private life, due to the high job demands, is another factor that has been associated with burnout. Estry-Bahar et al<sup>23</sup> indicated that the conflict between work and family, which is more prevalent among emergency physicians than other specialities, was independently associated with burnout. According to that study, a dose-response increase exists between work-family conflict and burnout (17.6%, 39.9%, and 68.9% with high burnout scores for, respectively, low, medium, and high work-family conflict scores). This result was confirmed by Jalili et al<sup>26</sup> among 160 EM physicians, where difficulties to balance professional and family life was the strongest predictor of EE (OR=9.2), while work-life balance and burnout were negatively associated in the study of Ben-Itzhak et al<sup>27</sup> among 70 EM physicians. These results indicate that having a supportive family and being able to dedicate

enough time to family issues may be two factors that could partially prevent the development of burnout, although this is a hypothesis that needs to be further studied.

Finally, the association between the years in the profession and the risk of burnout has also been studied, but the results are controversial. In a study among 263 physicians in Romania, the more the years in the profession, the higher the burnout scores; the percentage of physicians who reported high EE (according to MBI) changed from 11% at the 4<sup>th</sup> year of work to 17% at the 7<sup>th</sup> year<sup>36</sup>. On the contrary, Toker et al<sup>34</sup> indicated that physicians who spent >10 years in the profession had significantly lower DEP score from those during their first year. To add further controversy in the field, a large study among 1272 emergency physicians in the USA, found no association (positive or negative) between years of practice and burnout<sup>10</sup>.

#### ***Risk Factors Related to Copying Methods, Personality Traits and Other Mental Disorders***

In a study among 77 emergency medicine physicians in the USA, Keller et al<sup>9</sup> investigated the methods of self-copying with stress and job demands as a risk factor for burnout. The findings indicated that physicians with high EE scores used more short-term than long-term coping methods for dealing with stress, while physicians with high DEP scores reported less frequent use of coping methods than the rest, overall. Talking it out with others and making alternate plans were the two most frequently used long-term methods. On the other hand, preparing for the worst, crying, daydreaming, using food or food substitutes, and sleeping more than usual, were all common short-term coping methods and were strongly related to each other. The results of Howlett et al<sup>37</sup> were similar; task-oriented coping (action response) was associated with decreased burnout, whereas emotion-oriented coping (emotional response) was associated with increased burnout, although this study included emergency medicine personnel of several specialties, and not only physicians. Finally, in the study of Hutchinson et al<sup>21</sup> among 41 physicians, DEP was significantly correlated with escape-avoidance and accepting responsibility, and EE was significantly associated with escape-avoidance, although the different coping methods were not retained in the final regression model.

Stress is another risk factor associated with burnout. In the above report<sup>21</sup>, 53% of physicians

reported levels of perceived stress (as assessed by the Perceived Stress Scale) that were above the average of perceived stress for the group, and stress was an independent predictor of EE. In a study among 70 EM physicians in Israel, stress and preoccupying thoughts were univariately associated with burnout, while the degree of worry (I worry a lot) was an independent predictor of burnout presence<sup>27</sup>. Similarly, Kuhn et al<sup>11</sup> indicated that among 193 EM physicians, the single strongest predictor of burnout was anxiety caused by concern for bad outcomes (Odds Ratio, OR=6.35). An association between depression and burnout has also been reported. In a recent study among 33 EM physicians conducted in Ireland, burnout was significantly associated with a history of depression (OR=3.13)<sup>24</sup>. Moreover, Lu et al<sup>14</sup> indicated that burnout was associated with a positive screen for depression (28.6% vs. 12.1%) among 77 EM physicians in USA while, as stated by Ben-Itzhak al<sup>27</sup>, the scores in the depressive symptoms were significantly different between the group of physicians with and without burnout.

#### ***Other Risk Factors***

The association between demographic factors and burnout prevalence is currently controversial. In the study of Alqahtani et al<sup>30</sup> among EM physicians in Saudi Arabia, males were at almost three-fold higher risk in developing burnout compared to female physicians. On the contrary, in another report among 160 EM physicians in Iran<sup>26</sup>, females had a higher relative risk for presenting high DEP, compared to males, while Patterson et al<sup>7</sup> referred a trend ( $p=0.09$ ) for an association between female sex and burnout among physicians in Canada. Nevertheless, several other authors<sup>1,24,27</sup> did not find any association between gender and burnout. Data regarding age are also controversial. Several authors<sup>1,10,24,27</sup> have found no association between burnout and age. However, Jalili et al<sup>26</sup> observed that younger age was associated with high DEP scores; this result was confirmed by Toker et al<sup>34</sup> who reported that the younger the age of the EM physicians, the higher the scores in DEP and EE.

The potential association between burnout and lifestyle has also been assessed, but data are scarce. Alqahtani et al<sup>30</sup> found that smokers were at significantly higher risk for burnout compared to non-smokers (adjusted OR=15.37), and Golberg et al<sup>10</sup> indicated that alcohol con-

sumption for more than once a week is independently associated with burnout among 1272 US EM physicians. Moreover, the frequency of exercising seems to be associated with burnout and this association is negative, as indicated by both Golberg et al<sup>10</sup> and Estry-Behar et al<sup>23</sup>, with burnout physicians exercising significantly less than the rest.

Sleep disorders have also been associated with burnout. Trouble sleeping at night was independently associated with burnout in the study of Golberg et al<sup>10</sup>. Alqahtani et al<sup>30</sup> reported that physicians with history of taking medications for sleep disorders expressed higher risk for burnout opposed to those with no history of sleep disorder medication (adjusted OR=6.59). Nevertheless, sleep disorders were self-assessed in both studies, and no official questionnaire or a sleep study was used.

### Conclusions

Burnout among EM physicians is a major health issue that has to be recognized and properly addressed. Although the majority of studies agree that its prevalence is high, direct comparisons are difficult, mostly because of the various definitions and cut-off values that have been used for the MBI, which is the most frequently used tool for burnout diagnosis. Several work-related factors, such as heavy workload, violent environment, problematic coworkers relationship, low job satisfaction, and trouble in balancing professional with family life have been identified to be independently associated with burnout; thus, there has to be a team effort in optimizing the working environment and offering the support needed to all EM physicians involved, in order to solve these conditions. Moreover, since burnout is also associated with specific personality characteristics and especially with methods of coping, physicians in high risk of developing burnout have to be early identified and properly consulted. More case-control studies regarding behavioural intervention and promotion of healthier lifestyles are needed to this direction, as they could provide new insight into the effective treatment of burnout syndrome in the future.

### Conflicts of interest

The authors declare no conflicts of interest.

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