Shujaa et al. Saudi J Er Med. 2022;3(1):096-103
https://doi.org/10.24911/SJEMed/72-1603709287

REVIEW ARTICLE

Epidemiology and factors affecting resident's burnout at the emergency department: a systematic review

Asaad S. Shujaa[1]*, Feras K. Mimarji[2], Bayan Al-Ghadeer[2], Maan A. Aldubayan[3], Khalid Khalaiwi[3], Adnan M. Usmani[4], Abdullah A. Alhadhira[5]

ABSTRACT

Emergency medicine is a highly stressful field of medicine, with emergency department physicians exhibiting some of the highest rates of burnout, anxiety, and other stress-related conditions. This results in a decrease in quality of life of emergency health professionals and negatively affects the care of the patients. Six databases were searched using specific search terms. We included studies that assessed the prevalence and risk factors for burnout in emergency health professionals, or those that included proposed steps to address the issue. The studies were assessed for the quality of evidence using the National Institute of Health software utility. Twenty-one studies were found that met all inclusion criteria. A detailed review of these confirmed a high prevalence of burnout in emergency healthcare but evidenced that factors such as location influenced the overall values. It also evidenced a correlation between burnout and quality of patient care. Emergency physicians need more practical intervention to decrease burnout and stress as these silent diseases are highly prevalent among physicians and affect the patients' care.

Keywords: Burnout, emergency, depersonalization, emotional exhaustion, Maslach.

Introduction

Burnout is the most common chronic work-related disorder among physicians [1-3]. It has received much attention in the last decade as the prevalence of burnout among physicians is increasing in alarming rate. In addition, studies found that physicians' burn-out had greatly affected the patient care [3,4]. Another study found that some physicians considered leaving their job [5]. The studies also linked the physician's burnout with suboptimal patients care and it was associated with doubled risk for medical mistakes [6]. It is also reported that it has financial implications for the health care system because it is estimated that many doctors leave their job due to stress and burnout, costing millions of dollars [7-9].

Emergency health care professionals are considered the most affected physicians due to the nature of the emergency room (ER) shifts [1]. Many factors increased the burnout among emergency department (ED) Physicians like workplace stressors, on-call duties, night shifts, and lack of consultant advice during work [10-14]. Other studies found that age, gender, and marital status had significantly affected the rate of burnout in ED Physicians [2,9,15,16]. The rate of burnout among ED Physicians are considered higher than the burnout of general populations [8,9]. However, accurate estimation is needed to stand on the real epidemiology of the burnout and how it affected the health care system.

Thus, in this review, we aim to investigate the incidence of burnout among ED Physicians and factors increasing the stress and burnout among ED Physicians. The review also investigated the possible intervention to decrease the burnout among ED Physicians.

Methods

Literature search

A comprehensive search approach was used to identify studies from six databases PubMed, Google Scholar,

Correspondence to: Asaad S. Shujaa
*Consultants and Program Director of Residency Program, Emergency Department, Johns Hopkins Aramco Healthcare Centre, Dahran, Saudi Arabia.
Email: asaads2012@gmail.com
Full list of author information is available at the end of the article.
Received: 30 November 2021 | **Accepted:** 26 December 2021

SCOPUS, ISI Web of Science, Clinical Trial.gov, and Cochrane Collaboration. The keywords used were (emergency OR ER) AND (burnout OR "burned out" OR depersonalization OR "emotional exhaustion" OR burnout, professional OR emotional stress OR psychological stress OR stress, psychological OR compassion fatigue) AND ("attending physician" OR physician or physicians OR doctor or medical staff, hospital OR physicians). We restricted our search to human studies. All types of study designs were included.

Inclusion and exclusion criteria for studies

Specific inclusion criteria were used to identify high quality and studies that fulfil the goals of this study. These were limited to:

- Studies that assessed the risk of burnout in emergency health care professional
- Studies assessed the prevalence of burnout in emergency health care professional
- Studies report the causes and factors affecting burnout in emergency health care professional. Books, review articles, letters to the editor, editorial reports, case reports, and conference abstracts and duplicates were excluded.

Screening for studies

The retrieved studies from each database were screened based on inclusion and exclusion criteria. First, title/abstract screening was conducted by three independent reviewers. The included studies were then screened thoroughly to make sure it fulfils the target of this review. Each study was reviewed thoroughly to extract and build a qualitative review.

Quality assessment of the included papers

The quality of the included studies was evaluated by three reviewers using the National Institute of Health (NIH) quality assessment tool that has 13 domains assessing the quality of evidence in different study designs including the cohort studies. Table 1 illustrates the 13 domains and possible answers. Two reviewers assessed the quality of each study and any disagreements were solved through discussion with the third reviewer.

Results

Search results

The research yielded 3,346 studies that corresponded to the goal of our study and search terms used. 1,223 duplicate studies were removed. Screening of the studies resulted in only 21 studies fulfilled the inclusion criteria and were included in the qualitative synthesis (Figure 1).

Quality of the included studied

The included studies are considered to have high quality by defined parameters (Table 2).

Patients' characteristics

A total of 21 studies were included in this study from 12 different countries (Table 3). The mean ages of the included physicians were 35 to 40 years old. All studies were cross-sectional studies except two studies which assessed an intervention plan to decrease the burnout in emergency health professionals. Most studies used Maslach burnout inventory which assesses three domains of burnout: the emotional, exhaustion, and depersonalization domain (Table 3).

Table 1. *The NIH quality assessment tool.*

Domains	Yes	No	Other [cannot determine (CD), not applicable (NR), not reported (NA)]
1. Was the research question or objective in this paper clearly stated?			
2. Was the study population clearly specified and defined?			
3. Was the participation rate of eligible persons at least 50%?			
4. Were all the subjects selected or recruited from the same or similar populations (including the same time period)? Were inclusion and exclusion criteria for being in the study prespecified and applied uniformly to all participants?			
5. Was a sample size justification, power description, or variance and effect estimates provided?			
6. For the analyses in this paper, were the exposure(s) of interest measured prior to the outcome(s) being measured?			
7. Was the timeframe sufficient so that one could reasonably expect to see an association between exposure and outcome if it existed?			
8. For exposures that can vary in amount or level, did the study examine different levels of the exposure as related to the outcome (e.g., categories of exposure, or exposure measured as continuous variable)?			
9. Were the exposure measures (independent variables) clearly defined, valid, reliable, and implemented consistently across all study participants?			
10. Was the exposure(s) assessed more than once over time?			
11. Were the outcome measures (dependent variables) clearly defined, valid, reliable, and implemented consistently across all study participants?			
12. Were the outcome assessors blinded to the exposure status of participants?			
13. Was loss to follow-up after baseline 20% or less?			
14. Were key potential confounding variables measured and adjusted statistically for their impact on the relationship between exposure(s) and outcome(s)?			

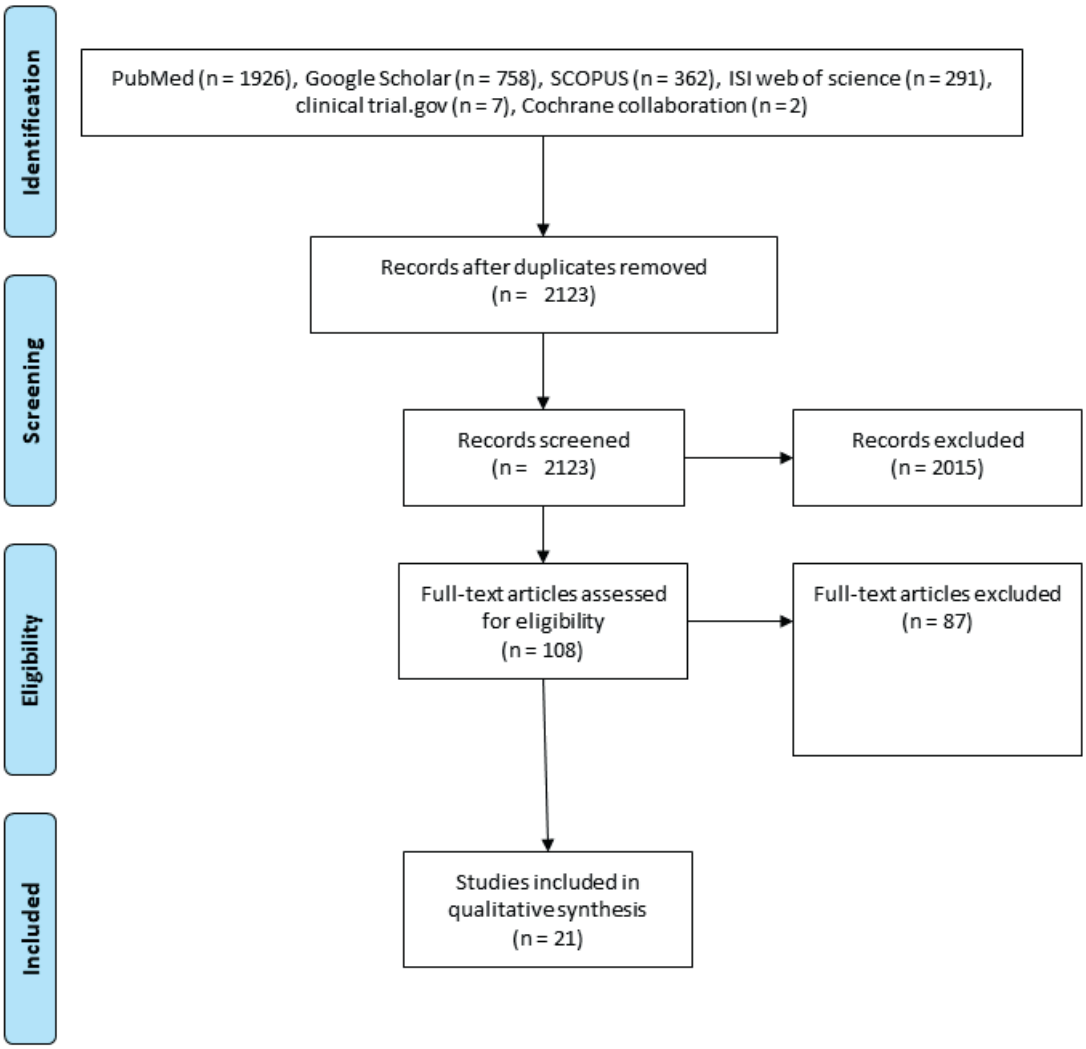

Figure 1. *PRISMA flowchart summarizing the search process in this study.*

Selected articles' summary

Incidence of burnout affecting residents at the ED

A cross-sectional study conducted in Saudi Arabia on ED Physicians and nurses using the Maslach burnout inventory which assesses three domains of burnout: the emotional, exhaustion, and depersonalization domain [17]. The age of the participants ranges between 31 and 35 years most of them were female. The emotional exhaustion represented 88.7% of cases while only 20.6% of ER health care professionals had high depersonalization. For low personal accomplishments, 41.1% of cases had a sense of low personal accomplishments [17]. The burnout was prevalent in 16% of health care professionals [17]. A study conducted in the United States reported the incidence of burnout in emergency medicine physicians was the highest in PGY-3 (87.3%) followed by PGY-2 (81.7%) and was the least in PGY-4 (63%) [19]. The study also reported that the level of emotional exhaustion was significantly associate with PGY level [19]. Another study conducted in the United States at two university-based emergency medicine reported a very high rate of burnout in both residents and attending physicians. Both attending and resident physicians had the same burnout rate of 57.1%. However, the residents had high rates of depression, lower quality of life scores [25]. Another study reported lower burnout rates in United States physicians, unlike the previous studies. They found that 65% of residents had the criteria for the diagnosis of burnout. 33% of residents had emotional exhaustion, 59% had a high degree of depersonalization, and 59% had a low sense of personal accomplishment [30].

De Stefano et al. [6] also found that burnout is a common problem in ED Physicians as they found that 39% of physicians had at least one or more domains of the burnout. A French study found that 27.1% of the ED Physicians have reported work strains which is higher than the average work strain reported in general populations. In addition, burnout was reported in 19.3% of the ED Physicians. Another study which was conducted in France found reported a similar incidence of burnout which was defined in this study as an extremely high level of emotional exhaustion and depersonalization. The burnout prevalence was 34.6% of ED Physicians. Emotional exhaustion and depersonalization were represented in 15.8% and 29.6% of ED Physicians [26].

Another cross-sectional study conducted in Palestine investigated the prevalence and associated risk factors for

Table 2. *Results - NIH quality assessment tool [a].*

ID	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Alqahtani et al. [17]	Yes	Yes	Yes	No	No	No	Yes	No	Yes	Yes	Yes	No	NA	No
Bergmueller et al. [18]	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	NA	Yes
Dam et al. [19]	Yes	Yes	Yes	No	No	No	Yes	No	Yes	Yes	Yes	No	NA	No
De Stefano et al. [6]	Yes	Yes	Yes	No	Yes	No	Yes	Yes	Yes	Yes	Yes	No	NA	No
Durand et al. [20]	Yes	Yes	Yes	No	No	No	Yes	No	Yes	Yes	Yes	No	NA	No
Erdur et al. [21]	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	NA	Yes
Hamdan and Hamra [22]	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	NA	Yes
Hart et al. [23]	Yes	Yes	Yes	No	No	No	Yes	No	Yes	Yes	Yes	No	NA	No
Hutchinson et al. [10]	Yes	Yes	Yes	No	Yes	No	Yes	Yes	Yes	Yes	Yes	No	NA	No
Jalili et al. [11]	Yes	Yes	Yes	No	No	No	Yes	No	Yes	Yes	Yes	No	NA	No
Julia-Sanchis et al. [24]	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	NA	Yes
Kamaloo et al. [12]	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	NA	Yes
Lloyd et al. [13]	Yes	Yes	Yes	No	No	No	Yes	No	Yes	Yes	Yes	No	NA	No
Lu et al. [25]	Yes	Yes	Yes	No	Yes	No	Yes	Yes	Yes	Yes	Yes	No	NA	No
Moukarzel et al. [26]	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	NA	Yes
Olson et al. [27]	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	NA	Yes
Rajan and Engelbrecht [28]	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	NA	Yes
Schooley et al. [29]	Yes	Yes	Yes	No	No	No	Yes	No	Yes	Yes	Yes	No	NA	No
Soltanifar et al. [15]	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	NA	Yes
Takayesu et al. [30]	Yes	Yes	Yes	No	No	No	Yes	No	Yes	Yes	Yes	No	NA	No
Xiao et al. [31]	Yes	Yes	Yes	No	Yes	No	Yes	Yes	Yes	Yes	Yes	No	NA	No

1. Was the research question or objective in this paper clearly stated?
2. Was the study population clearly specified and defined?
3. Was the participation rate of eligible persons at least 50%?
4. Were all the subjects selected or recruited from the same or similar populations (including the same time period)? Were inclusion and exclusion criteria for being in the study prespecified and applied uniformly to all participants?
5. Was a sample size justification, power description, or variance and effect estimates provided?
6. For the analyses in this paper, were the exposure(s) of interest measured prior to the outcome(s) being measured?
7. Was the timeframe sufficient so that one could reasonably expect to see an association between exposure and outcome if it existed?
8. For exposures that can vary in amount or level, did the study examine different levels of the exposure as related to the outcome (e.g., categories of exposure, or exposure measured as continuous variable)?
9. Were the exposure measures (independent variables) clearly defined, valid, reliable, and implemented consistently across all study participants?
10. Was the exposure(s) assessed more than once over time?
11. Were the outcome measures (dependent variables) clearly defined, valid, reliable, and implemented consistently across all study participants?
12. Were the outcome assessors blinded to the exposure status of participants?
13. Was loss to follow-up after baseline 20% or less?
14. Were key potential confounding variables measured and adjusted statistically for their impact on the relationship between exposure(s) and outcome(s)?

[a] List of included studies: [17], [18], [19], [6], [20], [21], [22], [21], [10], [11], [24], [12], [13], [25], [26], [27], [28], [29], [15], [30], [31].

burnout in physicians and found that 64% had emotional exhaustion, 38.1% had high depersonalization, and 34% had a sense of low personal accomplishment. The study found that the burnout and emotional exhaustion was higher in physicians than other workers like nurses and administrative workers [22].

In Iran, 39% of the respondents had high depersonalization, 37% had high emotional exhaustion, and 46% had a lack of self-accomplishments [11]. Another study conducted in Iran had reported the same burnout rates. The study was a nationwide study that assessed the burnout in female ED Physicians. The study revealed that 84% of the participants had moderate to the high level of emotional exhaustion, 48.1% had moderate to high depersonalization, as well as 80.5% had moderate to high burnout [15].

A Spanish study measured the burnout among ED Physicians and reported that all ED Physicians had higher burnout compared to the Spanish general population [24]. A Canadian study graded each domain of burnout into three degrees: high, moderate, and low risk [13]. The study found that 46% of the patients fell within medium to high levels of emotional exhaustion, while 93% had a high level of depersonalization and 79% were in the medium and low of personal accomplishments [13].

A study in Africa had reported the same incidence of the burnout and exhaustion in the ER health professionals. The study found the difference in burnout rates among specialists and doctors [28]. The specialist had reported fewer burnout rates than other residents. They found that 100% of doctors had a moderate to high risk for emotional exhaustion and 43% had a high risk for depersonalization problems. Surprisingly, 71% were at high risk of a sense of lack of accomplishment which was considered high for specialists. Most physicians reported that they are usually had emotional exhaustion during the work a few times per week [28].

Schooley et al. [29] compared the burnout between the ED Physicians and nurses in the same hospital to understand the role of the workplace and its effect on the physicians' burnout. The study found that the burnout was not dependent on any sociodemographic characters rather than the workplace itself. In this study, they found that all ER staff had usually moderate to high risk for emotional exhaustion, depersonalization, and a sense of lack of accomplishments [29].

A Chinese study reported that anxiety prevalence was in line with the burnout prevalence. In this study, the study assessed the anxiety using the HADS scale and found that 37.1% of ED Physicians had a high anxiety or depression

Table 3. *Description of 21 studies included in the current study [a].*

ID	Country	Sex		Age (mean and SD)	Number	Study design
		Female	Male			
Alqahtani et al. [17]	Saudi Arabia	NA	NA	NA	95	Multicenter questionnaire
Bergmueller et al. [18]	Germany and Ukraine	57	40	37 (12.21)	97	Multicenter questionnaire
Dam et al. [19]	United States	70	150	32	222	Multicenter questionnaire
De Stefano et al. [6]	France	9	14	NA	23	one center questionnaire
Durand et al. [20]	France	20	8	36.9 (8.5)	28	one center questionnaire
Erdur et al. [21]	Turkey	36	138	36.8 (5.8)	174	Multicenter questionnaire
Hamdan and Hamra [22]	Palestine	33	109	NA	142	Multicenter questionnaire
Hart et al. [23]	USA	NA	NA	NA	34	Multicenter questionnaire
Hutchinson et al. [10]	Jamaica	13	17	NA	30	one center questionnaire
Jalili et al. [11]	Iranian	15	150	33.6	165	Multicenter questionnaire
Julia-Sanchis et al. [24]	Spain	200	115	40.9 (9.03)	315	Multicenter questionnaire
Kamaloo et al. [12]	Iran	13	7	32	20	one center questionnaire
Lloyd et al. [13]	Canada	35	233	38	268	Multicenter questionnaire
Lu et al. [25]	USA	29	48	NA	77	Multicenter questionnaire
Moukarzel et al. [26]	France	NA	NA	37.4 (9.9)	69	Multicenter questionnaire
Olson et al. [27]	United States	83	197	30 (3.1)	281	Multicenter questionnaire
Rajan and Engelbrecht [28]	South Africa	51	42	NA	93	Multicenter questionnaire
Schooley et al. [29]	Turkey	NA	NA	NA	38	Multicenter questionnaire
Soltanifar et al. [15]	Iranian	77	0	36	77	Multicenter questionnaire
Takayesu et al. [30]	USA	89	129	NA	218	Multicenter questionnaire
Xiao et al. [31]	China	80	125	up to 40	205	Multicenter questionnaire

[a] List of the included studies: [17], [18], [19], [6], [20], [21], [22], [21], [10], [11], [24], [12], [13], [25], [26], [27], [28], [29], [15], [30], [31].

rate. 25.4% of physicians had a high level of burnout in consistent with physicians' anxiety. The rates were higher than the burnout rate in the general populations [31].

Causes of burnout affecting residents at the ED

Alqahtani et al. [17] investigated the predictors of burnout and found that smoking, sleep medication, antianxiety medication, and on-call duty were the most significant predictors of burnout. Another study in emergency ambulance doctor that investigated the personality traits as one of the main causes of burnout. The study found that increased personality traits like neuroticism, depressive personality, and emotional lability were accompanied by increases in the emotional exhaustion and depersonalization [18]. Other personality traits like sociability and mental balance had decreased the emotional exhaustion and depersonalization. However, the study reported that personality traits are considered a limited cause of burnout as they found that the burnout was very low in emergency ambulance doctors despite being more neurotic and depressive [18].

Dam et al. [19] investigated the character trait of grit and how it was associated with burnout in emergency physicians. The study reported that the burnout incidence was the highest in physicians who had the lowest grit (94.7%) and was the least in physicians with the highest grit. The grit was also inversely associated with depersonalization, emotional exhaustion level, and personal accomplishment [19]. In the same context, Olson et al. [27] assessed the level of grit among the different levels of residents and found that the attending residents and residents had the same grit score.

Factors affecting burnout affecting residents at the ED

Alqahtani et al. [17] assessed factors affecting the burnout and each of the three domains of the Maslach burnout inventory questionnaire. For burnout, it was reported that male health professionals had more rate of burnout than female. Physicians who had on-call duties and were smoking had higher rates of burnout than males. Predisposing conditions like anxiety, sleep disorders had increased the rate of burnout. Other factors like place of work, duration of work, age, marital status, nationality, highest qualification, job title, duration of annual vacation, the average number of night shifts did not affect the rate of burnout [17].

For the depersonalization domain, there was a significant association between depersonalization among ER healthcare professionals and the place of work of participants. They compared the prevalence of depersonalization in the general hospital to maternity and paediatric hospital [17]. The study found that the prevalence of depolarization was 37.1% in the

general hospital compared to 6.1% in the maternity and paediatric hospital [17]. In addition, the study found that male healthcare professionals had higher depolarization issues compared to female health care professionals. The on-call duty had significantly increased the depersonalization issues which was prevalent in 32.7% compared to 17.8% to physicians with no on-call duty. Physicians who had sleep medications had higher depersonalization issues compared to those who do not [17]. Smoking was associated with the highest incidence of depersonalization up to 60.4%. Other factors like age, nationality, duration of work in the current facility, average number of working days/week, marital status, qualification, the average number of night shifts/month, history of antidepressants, and antianxiety medication, job title, and duration of annual vacation did not affect the incidence of the burnout [17].

For high emotional exhaustion, age was the most significant factor associated with high emotional exhaustion. The study found that emotional exhaustion was prevalent in 94.8% of cases aged between 31 and 35 years compared to 78.5% of health professionals aged between 25 and 30 years [17]. Gender was also a deterministic factor as the study found female health care professionals had higher emotional exhaustion than male health care professionals. Physicians who work in general hospitals, non-Saudi, with a lower degree like diploma had higher emotional exhaustion than other types of hospitals, Saudi, and physicians with higher degrees, respectively. Marital status, smoking history, history of antidepressants, and antianxiety medication duration of work in the current facility, average number of working days/weeks, and average number of night shifts/month did not increase nor decrease the emotional exhaustion [17].

For low personal accomplishments, marital status affected the sense of professional accomplishments as the single tended to feel less accomplished compared to those who are married [17]. Lower degree holders like diploma had felt less accomplished than those who had higher degrees. The number of night shifts significantly affected the sense of self-accomplishments as the higher the number of the night shifts, the less the sense of the accomplishments [17].

Durand et al. [20] differentiated between burnout and work strain in the ER and found that each type of these work exhaustion is associated with different factors. As for burnout, young physicians reported more depersonalization, work dissatisfaction, and emotional exhaustion. Moreover, fear of making mistakes and insufficient time for different tasks increased the risk of burnout. For the job strain, the interpersonal conflicts at the workplace, and sleep disorders were the main risk factors for the job strains.

Hamdan and Hamra [22] reported that the site of the workplace is an important determinant for the burnout in the ED Physician in Palestine. They found that there was a high degree of burnout in the physicians working in hospitals in the west bank than those working in the Gaza strip. Moreover, the more the physicians are exposed to physical violence, the higher the levels of burnouts. Younger age was also found to be a significant factor for the high burnout rate in ED Physicians.

Jalili et al. [11] investigated the effect of different stressors on the burnout among ED Physicians. The main significant stressors that affected all the domains of burnout like improper physical environment at work, lack of support systems economic problems, inability to balance between professional and family life, fear of medical mistakes, lack of appropriate educational issues, lack of a societal and public image of ED Physicians, increased violence at ER, unavailability of consultant and problems with other colleagues.

Juliá-Sanchis et al. [24] found that age and length of service inversely proportional to personalization issues. The study investigated affective empathy and found that high affective empathy decreased depersonalization. However, the sense of the lack of personal accomplishment was increased as the affective empathy increased. Another study found that the main independent risk factors were low mental components and job strains [26]. A study conducted in South Africa found that age and gender did not influence the burnout rate in ED Physicians [28].

Takayesu et al. [30] reported that demographic characters were not associated with the degree of burnout in ED Physicians. It was only found that ER doctors who were married or have significant other had a higher prevalence of burnout compared to single residents.

Xiao et al. [31] found that the job dissatisfaction was negatively associated with burnout in these patients. Overall job satisfaction was the only significant predictor of physician burnout [31].

The effect of the burnout on the performance of the emergency health professionals

A study investigated the influence of the emergency physician's burnout on the waiting times of patients. The study reported that the high burnout was associated with increasing time of waiting for ER patients [6]. The study found that burnout was an independent risk factor for prolonged waiting times. However, the study had limitations as they did not consider the overcrowding as one of the factors affecting the waiting time for patients. The study highlighted the influence of burnout on the work performance of the ED Physicians and recommended more interventions to address these issues [6]. On the other hand, Hamdan and Hamra [22] reported the intention of the ED Physicians to leave their work was associated with high burnout. Thus, burnout does not only affect the patients but also the ED Physicians.

Erdur et al. [21] investigated the influence of burnout on the violence of ED Physicians in Turkey. The study investigated 112 physicians working in both private and public hospitals. Most physicians were married male doctors, aging between 24 and 59 years old. The study found a significant association between depersonalization, emotional exhaustion, both total and verbal violence [21].

Llyod et al. [13] had assessed the influence of burnout on the job satisfaction and found that job satisfaction was greatly associated with the burnout rate in the ED Physicians. They found that the same factors that increased job dissatisfaction increased the rate of burnout in physicians. They found that older age, being the head of the department, increased holiday had greatly decreased the burnout and increased the weeks of holidays [13]. The study also found that the site of the workplace was one of the determining factors of burnout and job dissatisfaction [13].

Lu et al. [25] revealed that the burnout significantly affected the quality of life of both residents and attending physicians. In addition, the burnout affected the care of patients as reported by the physicians themselves. The physicians reported that total agreement to six items that reported suboptimal care which is 1) "I admitted or discharged patients to make the ED more manageable;" (2) "I did not fully discuss treatment options or answer a patient's questions;" (3) "I ordered more laboratory or radiology tests because I was so busy;" (4) "I did not treat a patient's pain promptly;" (5) "I did not communicate important information during handoff to an ED colleague or admitting service;" and (6) "I did not discuss a patient's treatment plan with the patient's appropriate nursing or ancillary staff." The study reported that all physicians who had a high rate of burnout had done one or more of suboptimal care actions [25].

Another study assessed the coping strategies developed by ED Physicians to handle stress and burnout. Emotional exhaustion was prevalent in 53.3% of physicians [10]. It was found that depersonalization was associated with two coping strategies as escape-avoidance and accepting responsibility [10]. Emotional exhaustion was also significantly associated with escape-avoidance strategy [10].

Intervention to decrease burnout in ER health professional

Hart et al. [23] investigated the application of wellbeing initiative on the ER doctors to decrease burnout rate. They designed a six sessions program and measured the efficacy of the initiative based on the score of the Maslach burnout inventory before and after the sessions. Each session had a specific theme that included conscious, honour feelings, life lessons that create what works, and release control for more empowerment. In between the sessions, there was a discussion that was called happy chats. The happy chat hours were used for building relationships and receiving reflections on every session. These initiatives were similar to other initiatives applied to different specialties [23]. However, the program did not seem to improve the burnout status in ER health professionals compared to other specialties. 43% of residents expressed worsened the overall burnouts while 39% of residents did not report any improvement of their burnout neither their wellbeing [23].

Kamaloo et al. [12] investigated the possible interventions to enhance burnout through focus groups. The ED Physicians suggested three main themes to be addressed which are changes in personal life and it should be more separated from work-life. The second one was the shift durations and the timetable for shifts. The physicians required more arrangements for their shifts. The last option was educational issues [12]. As mentioned before, the lack of consultant advice and presence during the shifts greatly affected the burnout and stress during shifts. That is why the physicians required a complete improvement of the educational system of the ED Physicians [12].

Conclusion

ED Physicians had the highest burnout rates compared to the general populations. The most significant factors increasing the incidence of burnout are usually the workplace environment and the lack of a support system. More interventions are needed to decrease the burnout and stress to enhance the physicians' quality of life and patients' care.

List of Abbreviations

ED	Emergency department
NIH	National Institute of Health

Conflict of interest

The authors declare that there is no conflict of interest regarding the publication of this article.

Funding

None.

Consent to participate

Ethical approval

Not applicable.

Author details

Asaad S. Shujaa[1], Feras K. Mimarji[2], Bayan Al-Ghadeer[2], Maan A. Aldubayan[3], Khalid Khalaiwi[3], Adnan M. Usmani[4], Abdullah A. Alhadhira[5]

1. Consultants and Program Director of Residency Program, Emergency Department, Johns Hopkins Aramco Healthcare Centre, Dahran, Saudi Arabia
2. Resident, Emergency Department, Johns Hopkins Aramco Healthcare Centre, Dahran, Saudi Arabia
3. Consultant, Emergency Department, Johns Hopkins Aramco Healthcare Centre, Dahran, Saudi Arabia
4. Strategic Center for Diabetes Research, College of Medicine, King Saud University, Riyadh, Saudi Arabia
5. Chair and Consultant, Emergency Department, Johns Hopkins Aramco Healthcare Centre, Dahran, Saudi Arabia

References

1. Dyrbye L, Shanafelt T. A narrative review on burnout experienced by medical students and residents. Med Educ. 2016;50(1):132–49. https://doi.org/10.1111/medu.12927
2. Shanafelt TD, Mungo M, Schmitgen J, Storz KA, Reeves D, Hayes SN, et al. Longitudinal study evaluating the association between physician burnout and changes in professional work effort. Mayo Clin Proc. 2016;91(4):422–31. https://doi.org/10.1016/j.mayocp.2016.02.001
3. Wallace JE, Lemaire JB, Ghali WA. Physician wellness: a missing quality indicator. Lancet. 2009;374(9702):1714–21. https://doi.org/10.1016/S0140-6736(09)61424-0

4. West CP, Huschka MM, Novotny PJ, Sloan JA, Kolars JC, Habermann TM, et al. Association of perceived medical errors with resident distress and empathy: a prospective longitudinal study. JAMA. 2006;296(9):1071–8. https://doi.org/10.1001/jama.296.9.1071
5. Dewa CS, Jacobs P, Thanh NX, Loong D. An estimate of the cost of burnout on early retirement and reduction in clinical hours of practicing physicians in Canada. BMC Health Serv Res. 2014;14:254. https://doi.org/10.1186/1472-6963-14-254
6. De Stefano C, Philippon AL, Krastinova E, Hausfater P, Riou B, Adnet F, et al. Effect of emergency physician burnout on patient waiting times. Intern Emerg Med. 2018;13(3):421–8. https://doi.org/10.1007/s11739-017-1706-9
7. Buchbinder SB, Wilson M, Melick CF, Powe NR. Estimates of costs of primary care physician turnover. Am J Manag Care. 1999;5(11):1431–8.
8. Fibuch E, Ahmed A. Physician turnover: a costly problem. Physician Leaders J. 2015;2(3):22–5.
9. Shanafelt TD, Dyrbye LN, West CP, Sinsky CA. Potential impact of burnout on the US pysician workforce. Mayo Clin Proc. 2016;91(11):1667–8. https://doi.org/10.1016/j.mayocp.2016.08.016
10. Hutchinson TA, Haase S, French S, McFarlane TA. Stress, burnout and coping among emergency physicians at a major hospital in Kingston, Jamaica. West Indian Med J. 2014;63(3):262–6.
11. Jalili M, Sadeghipour Roodsari G, Bassir Nia A. Burnout and associated factors among Iranian emergency medicine practitioners. Iran J Public Health. 2013;42(9):1034–42.
12. Kamaloo A, Ahmadipour A, Labbaf A, Hesari E, Valadkhani S, Zebardast J, et al. Why do emergency medicine residents experience burn out? A qualitative study. Iran J Psych. 2017;12(3):214–8.
13. Lloyd S, Streiner D, Shannon S. Burnout, depression, life and job satisfaction among Canadian emergency physicians. J Emerg Med. 1994;12(4):559–65. https://doi.org/10.1016/0736-4679(94)90360-3
14. Morsy S, Khalil SM, Doheim MF, Kamel MG, El-Basiony DSM, Ahmed Hassan HI, et al. Efficacy of ethyl-EPA as a treatment for Huntington disease: a systematic review and meta-analysis. Acta Neuropsychiatr. 2019;31(4):175–85. https://doi.org/10.1017/neu.2019.11
15. Soltanifar A, Pishbin E, Mashhadi NATTARAN, Najafi MNAJAF, Siahtir M. Burnout among female emergency medicine physicians: a nationwide study. Emerg Med Australas. 2018;30(4):517–22. https://doi.org/10.1111/1742-6723.12941
16. Sayed AM, Morsy S, Tawfik GM, Naveed S, Minh-Duc NT, Hieu TH, et al. The best route of administration of lavender for anxiety: a systematic review and network meta-analysis. Gen Hosp Psych. 2020;64:33–40. https://doi.org/10.1016/j.genhosppsych.2020.02.001
17. Alqahtani AM, Awadalla NJ, Alsaleem SA, Alsamghan AS, Alsaleem MA. Burnout syndrome among emergency physicians and nurses in Abha and Khamis Mushait cities, Aseer Region, Southwestern Saudi Arabia. Sci World J. 2019;2019. https://doi.org/10.1155/2019/4515972
18. Bergmueller A, Zavgorodnii I, Zavgorodnia N, Kapustnik W, Boeckelmann I. Relationship between burnout syndrome and personality characteristics in emergency ambulance crew. Neurosci Behav Physiol. 2018;48(4):404–8. https://doi.org/10.1007/s11055-018-0578-4
19. Dam A, Perera T, Jones M, Haughy M, Gaeta T. The relationship between grit, burnout, and well-being in emergency medicine residents. AEM Educ Train. 2019;3(1):14–9. https://doi.org/10.1002/aet2.10311
20. Durand AC, Bompard C, Sportiello J, Michelet P, Gentile S. Stress and burnout among professionals working in the emergency department in a French university hospital: prevalence and associated factors. Work. 2019;63(1):57–67. https://doi.org/10.3233/WOR-192908
21. Erdur B, Ergin A, Yüksel A, Türkçüer İ, Ayrık C, Boz B. Türkiye'de acil servislerde çalışan hekimler arasında şiddet ve tükenmişlik ilişkisinin değerlendirilmesi. Ulus Travma Acil Cerrahi Derg. 2015;21(3):175–81.
22. Hamdan M, Hamra AAA. Burnout among workers in emergency departments in Palestinian hospitals: Prevalence and associated factors. BMC Health Serv Res. 2017;17(1):3–9. https://doi.org/10.1186/s12913-017-2356-3
23. Hart D, Paetow G, Zarzar R. Does implementation of a corporate wellness initiative improve burnout? Western J Emerg Med. 2019;20(1):138–44. https://doi.org/10.5811/westjem.2018.10.39677
24. Juliá-Sanchis R, Richart-Martínez M, García-Aracil N, José-Alcaide L, Piquer-Donat T, Castejón-de-la-Encina ME. Measuring the levels of burnout syndrome and empathy of Spanish emergency medical service professionals. Australas Emerg Care. 2019;22(3):193–9. https://doi.org/10.1016/j.auec.2019.04.003
25. Lu DW, Dresden S, McCloskey C, Branzetti J, Gisondi MA. Impact of burnout on self-reported patient care among emergency physicians. West J Emerg Med. 2015;16(7):996–1001. https://doi.org/10.5811/westjem.2015.9.27945
26. Moukarzel A, Michelet P, Durand AC, Sebbane M, Bourgeois S, Markarian T, et al. Burnout syndrome among emergency department staff: prevalence and associated factors. BioMed Res Int. 2019;2019. https://doi.org/10.1155/2019/6462472
27. Olson N, Olson AS, Williamson K, Hartman N, Branzetti J, Lank P. Faculty assessment of emergency medicine resident grit: a multicenter study. AEM Educ Train. 2019;3(1):6–13. https://doi.org/10.1002/aet2.10309
28. Rajan S, Engelbrecht A. A cross-sectional survey of burnout amongst doctors in a cohort of public sector emergency centres in Gauteng, South Africa. Afr J Emerg Med. 2018;8(3):95–9. https://doi.org/10.1016/j.afjem.2018.04.001
29. Schooley B, Hikmet N, Tarcan M, Yorgancioglu G. Comparing burnout across emergency physicians, nurses, technicians, and health information technicians working for the same organization. Medicine (United States). 2016;95(10):1–6. https://doi.org/10.1097/MD.0000000000002856
30. Takayesu JK, Ramoska EA, Clark TR, Hansoti B, Dougherty J, Freeman W, et al. Factors associated with burnout during emergency medicine residency. Acad Emerg Med. 2014;21(9):1031–5. https://doi.org/10.1111/acem.12464
31. Xiao Y, Wang J, Chen S, Wu Z, Cai J, Weng Z, et al. Psychological distress, burnout level and job satisfaction in emergency medicine: a cross-sectional study of physicians in China. Emerg Med Australas. 2014;26(6):538–42. https://doi.org/10.1111/1742-6723.12315