

## Medical Student and Physician Burnout in the Gulf Region: A Systematic Review

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### Abstract

#### Background

Physician burnout is highly prevalent throughout medical education, training and practice, and substantially comprises the personal and professional well-being of those affected. This report is the first to comprehensively review published studies on physician burnout coming from the Gulf Region, examining the manner in which burnout is diagnosed, prevalence rates, and unique risk factors.

#### Methods

We conducted a systematic literature review on studies of burnout among medical students, residents, general physicians, specialist physicians and consultant physicians in Arab Gulf countries (Kingdom of Saudi Arabia (KSA), United Arab Emirates (UAE), Kuwait, Kingdom of Bahrain, Qatar, Yemen and Iraq).

#### Results

Our results demonstrate the increased recognition of, and interest in, physician burnout in the Gulf Region. For the most part, our findings parallel reports from other regions around the world. While there is great variability in the reported rates of burnout, at least in part to the different ways burnout is measure and defined, most studies of medical student, resident and attending-level physicians report burnout rates of between 30-50% in each cohort. Findings related to risk factors are inconsistent. Some reports suggest that working in the same center for long time, time on-call, shift work, tests/examinations, unfair assessment from superiors, lack of support from superiors, work demands affecting personal/home life, less satisfaction with career, less satisfaction with income, disorganized patient flow to clinics, patient pressure and violence, more paper work, less cooperative colleagues and job insecurity all may be related to burnout. Personal factors like having chronic disease, taking psychotropic drugs, smoking, sleeping less than 6 hours, suffering from sleep deprivation, back pain or having social problems also are associated with burnout, while participating in sports and having hobbies seem protective. Paralleling reports from other regions of the globe, burnout in the Gulf Region is associated with physical, psychological and occupational disturbances.

#### Conclusions

This systematic review of burnout in the Gulf Region confirms the universality of physician burnout regardless of age, gender, race, geography, religion, cultural background or positions in the medical job hierarchy, and the critical need to find effective preventative strategies.

**Key Words:** Burnout, Depression, Well-Being, Physician Distress, Gulf Region Physicians

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## Background

Physician burnout is a global crisis [1-4]. It is highly prevalent throughout medical education, training and practice [5-8]. Burnout dramatically impacts personal and professional well-being of those affected [5,9]. Physicians with burnout are more likely to make medical errors, leave the field of medicine prematurely, drink excessively or use other substances of abuse, and may have elevated rates of depression and suicidal ideation [5,10-13]. Professional organizations are increasingly recognizing the importance of physician burnout and recommendations for institutions, programs and hospitals to recognize and prevent physician distress are burgeoning [12,14-16].

Burnout is a maladaptive response to chronic job stress. There is no one agreed upon definition or consensus criteria for burnout [17]. The term, burnout, was originally coined almost 50 years ago as a response to job stress that leads to physical and behavioral symptoms in the form of “increasing anger, frustration, suspicion and paranoia regarding colleagues’ influence on one’s own personal career ambitions, excessive rigidity and inflexibility in practice, and the appearance of characteristics of one who suffers from depression” [7]. A more recent review of 182 studies involving 109,628 physicians from 45 countries found that 142 unique definitions of “burnout” were used, resulting in overall burnout prevalence ranging from 0 to 81% [17].

Burnout has been included in the 11th Revision of the International Classification of Diseases (ICD-11) as an occupational phenomenon, but not as a medical condition. The ICD-11 conceptualizes burnout as a syndrome resulting from chronic workplace stress that has not been successfully managed. It is characterized by three dimensions: 1) feelings of energy depletion or exhaustion; 2) increased mental distance from one’s job, or feelings of negativism or cynicism related to one’s job; and 3) reduced professional efficacy [8].

Physician burnout is not simply a product of western medicine. While most of the studies, systematic reviews and met analyses have come from the United States and Europe, burnout has been reported with high rates in the Far East, Asia, Latin America, Africa and the Middle East [18-23]. This report is the first to comprehensively review published studies on physician burnout coming from the

Gulf Region, examining the manner in which burnout is diagnosed, prevalence rates, and unique risk factors. We present the findings by level of training (medical student, resident, practicing physician) or by mixed group when separate, categorical data was not available.

## Methods

### Study design

We conducted a literature review on studies of burnout among medical students, residents, general physicians, specialist physicians and consultant physicians in Arab Gulf countries (Kingdom of Saudi Arabia (KSA), United Arab Emirates (UAE), Kuwait, Kingdom of Bahrain, Qatar, Yemen and Iraq).

### Eligibility criteria

We included studies if they met each of the following criteria: (1) published in English from through June 30, 2019; (2) used a validated tool (e.g. the Maslach Burnout Inventory) or clearly defined how burnout was operationalized; and (3) sampled a population of medical students, residents, general physicians, specialists and consultants (specialists who have practiced at least 3 years after completing specialty board training) from an Arab Gulf country.

### Information sources and literature search

We searched PubMed and Google Scholar electronic databases using a combination of the following Medical Subject Headings (MeSH) search terms and keywords: ‘medical student’, ‘residents’, ‘physicians’, ‘doctors’, ‘consultants’, ‘specialists’; ‘burnout’, ‘professional burnout’, ‘health care burnout’, ‘occupational stress’, ‘depression’, ‘death wishes’ and ‘suicide’; and ‘Saudi Arabia’, ‘Kuwait’, ‘United Arab Emirates’, ‘Qatar’, ‘Bahrain’, ‘Iraq’, ‘Yemen’.

### Study selection

Two authors independently screened the titles and abstracts of identified studies and removed duplicates. Studies considered eligible for full text screening were retrieved for full review.

### Data collection process and data items

We entered data extracted from each paper satisfying the inclusion criteria onto a summary table (Table 1) in the following categories: Study, Sample, Instruments, and Results.

**Table 1: Burnout Rates and Associated Features**

| Medical Students |   |   |  |   |
|------------------|---|---|--|---|
| Study            | Design (All Cross-Sectional)  | Sample  | Instrument   | Results (Burnout Prevalence and Associated Features)  |
| 33               | Medical students at the College of Medicine at Sultan Qaboos University in Oman, between October to December 2016.  | 662/670 (98%) students.<br>• 72.4% female.<br>• Mean age = 21.35 years.   | <u>MBI-HSS</u><br>Burnout = high EE, high DP and low PA<br>• High EE > 65<br>• High DP > 65<br>• Low PA < 33<br><u>PHQ-9</u><br>Depression >11 | <u>Prevalence of Burnout Syndrome = 7.4%.</u><br>• High EE = 30%<br>• High DP = 34%<br>• Low PA = 32%<br><u>Prevalence of Depression = 24.5%.</u><br><u>Associated Features</u><br>• Males and females equally likely to have Burnout.<br>• Younger students more likely to have Burnout.<br>• High EE, high DP, and low PA associated with Depression.   |
| 34               | Medical students at King Saud Bin Abdulaziz University for Health Sciences in Riyadh, KSA, between March and April 2016.  | 249/306 (81%) students.<br>• 32.5% female.<br>• Mean age = 21.8 years.  | <u>MBI-HSS</u><br>Burnout = NA<br>• High EE > NA<br>• High DP > NA<br>• Low PA < NA  | <u>Prevalence of Burnout Syndrome = 67%.</u><br>• High EE = 59%<br>• High DP = 62%<br>• Low PA = 60%<br><br><u>Associated Features</u><br>• Female students had lower overall Burnout and lower DP.<br>• No significant association between Burnout and involvement in extracurricular activities.  |
| 35               | Preclinical and clinical medical students at the College of Medicine at AlFaisal University in Riyadh, KSA and King Faisal Specialist Hospital and Research Center and Security Forces Hospital, between January and February 2016. | 276/400 (69%) students.<br>• 46% female.<br>• Mean age = 20.62 years.<br>• 230 (83%) preclinical.                           | <u>MBI</u><br>• High EE > 29<br>• High DP > 11<br>• Low PA < 32  | <u>Burnout</u><br>• High EE = 17.4%<br>• High DP = 56%<br>• Low PA = 15%<br><br><u>Associated Features</u><br>• Female students had higher EE and DP.   |
| 36               | Medical and dental students from private and government colleges in Jeddah, KSA, during the last month of the 2017 academic year.   | 645/NA(NA) Medical and dental students.<br>• 63% female.<br>• Mean age = 24.51 years.<br>• 282 (44%) were medical students. | <u>CBI - work Burnout section</u><br>High work Burnout = >49<br><br><u>PSPS</u>  | Prevalence of high work burnout = 68%<br>Mean level of work Burnout for all students was 56.73 (SD = 18.12).<br>Perfectionism<br>• Mean level of perfectionistic self-promotion was 42.99 (SD = 10.01).<br>• Mean level of non-display of imperfection was 42.31 (SD = 10.70).<br>• Mean level of non-disclosure of imperfection was 29.50 (SD = 5.95).<br><u>Associated Features</u><br>• No significant association between Burnout and age.<br>• No significant relationship between Burnout and perfectionistic self-promotion, non-display of imperfection, or non-disclosure of imperfection. |

| Residents |   |   |  |  |
|-----------|---|---|--|--|
| Study     | Design  | Sample  | Instrument   | Results (Burnout Prevalence and Associated Features)   |
| 37        | Residents at health-care centers in the emirates of Dubai and Abu Dhabi, between May and December 2016.                                     | 302/446 (68%) residents.<br>• 79% females.<br>• 91% >25 years,                    | <u>MBI</u><br>• High EE > 27<br>• High DP > 10<br>• Low P= NA<br><br><u>PHQ 9</u><br>• Moderate-Severe >14 | <u>Burnout</u><br>• High EE = 75.5%<br>• High DP = 84%<br>• Low PA = 74%<br><br><u>Prevalence of Depression = 16%.</u><br><u>Associated Features</u><br>• 83% with Depression also had Burnout.<br>• Burnout rate close to a 100%, especially for psychiatry, FM, and GS.<br>• Males and females almost equally likely to have Burnout and Depression. |
| 38        | Residents at multi center hospitals in KSA, between March and May 2013.   | 85/123(69%) ENT residents<br>• 33% Female.<br>• Mean age = 29 years.              | <u>MBI</u><br>Burnout = high EE, high DP and low PA<br>• High EE >26<br>• High DP >9<br>• Low PA <34       | <u>Prevalence of Burnout Syndrome =33 %.</u><br>• High EE = 62%<br>• High DP = 55%<br>• Low PA = 56%<br><br><u>Associated Features</u><br>• No significant association between Burnout and gender.   |
| 39        | Plastic surgery residents in KSA, in April 2015   | 38/57 plastic surgery residents (60%).<br>• 26% Female.<br>• Mean age = 28 years. | <u>MBI</u><br>Burnout = high EE, high DP and low PA<br>• High EE >26<br>• High DP >12<br>• Low PA <31      | <u>Prevalence of Burnout Syndrome =18 %.</u><br><u>Prevalence of Burnout Syndrome as high EE and high DP =47%.</u><br>• High EE = 71%<br>• High DP = 50%<br>• Low PA = 34%<br><br><u>Associated Features</u><br>• Gender effect not mentioned.   |
| 40        | Medical and surgical residents at King Abdulaziz Medical City-Riyadh and two hospitals in Buraidah, Qassim Province, between 2013 and 2014. | 181/425 (43%) residents.<br>• 59% female.<br>• Mean age= 27.6 years.              | <u>MBI</u><br>Burnout = high EE or high DP<br>• High EE >26<br>• High DP >9                                | <u>Prevalence of Burnout =81%.</u><br>• High EE = 43%<br>• High DP = 72%<br>• Low PA = 41%<br><br><u>Associated Features</u><br>• Female gender and married status were significantly associated with a higher prevalence of Burnout.  |
| 41        | Pediatric residents at King Abdulaziz University Hospital in May 2016.  | 35/50(70%) pediatric residents.<br>• 94% female.<br>• Age NA                      | <u>MBI</u><br>Burnout = high EE, high DP or low PA<br>• High EE >26<br>• High DP >9<br>• Low PA <34        | <u>Prevalence of Burnout =70%.</u><br>• High EE = 62%<br>• High DP = 71%<br>• Low PA = 67%<br><br><u>Associated Features</u><br>• Engaged or married suffered from higher EE and DP but not in PA. P-value (EE=0.01, D=0.017, PA=0.9).<br>• No significant association between Burnout and gender.   |

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| 42 | Physicians at government primary health care centers in Asir province in KSA, between October 2010 to June 2011. | 370/ 390 (95%).<br>• 18% female.<br>• Mean age = 39.8 years.<br>• Resident 98.1%, specialist 1.4% and consultant 0.5 %. | <u>MBI</u><br>• High EE >25<br>• High DP >8<br>• Low PA <34                                      | <u>Scored high Burnout in all 3 dimensions= 6%</u><br><u>No Burnout in any dimension= 35%</u><br>• High EE = 30%<br>• High DP = 16%<br>• Low PA = 20%<br><br><u>Associated Features</u><br>• Report of EE: older physicians < younger physicians.<br>• DP risk: physicians worked 5-15 years >(5folds) physicians worked 5 years (OR = 4.96; 95% CI: 1.86–16.9).<br>• Low PA score risk= those with age of 40-49 years less likely than < 30 years.<br>• Low PA score risk= more in those worked in current PHCC for ≥ 5 years than those < 5 years.<br>• Females less likely to have high EE and DP than males<br>• No gender difference for PA |
| 43 | Ophthalmology resident in KSA, in January 2018.  | 117/ 166 (70%) ophthalmology residents.<br>• 46% Female.<br>• Age NA.   | <u>MBI</u><br>Burnout = high score of EE or D.<br>• High EE >26<br>• High DP >12<br>• Low PA <32 | <u>Burnout prevalence= 41%</u><br>• High EE = 38%<br>• High DP= 17%<br>• Low PA = 35%<br><br><u>Associated Features</u><br>• Significantly positive correlation between number of on call days per month and EE subscale.<br>• Female and male OR = 0.8 and 1 respectively with p= 0.78.<br>• Significant relationship with being dissatisfied with work/life balance and not choosing medicine for graduate level study   |
| 44 | Residents in the FM programs in AlMadina, KSA, published February 2019   | 75/105 (71%) FM residents.<br>• 55% female.<br>• 87% Age= 26-30 years (87%)   | <u>MBI</u><br>Burnout = high score of EE<br>High EE >26  | <u>Burnout</u><br>• High EE = 24 (32.0%) of residents (mean EE subscale score = 22.5 ± 12.8 indicating moderate levels).<br><br><u>Associated Features</u><br>• Shift work<br>• Tests/examinations<br>• Large amount of content to be learnt<br>• Unfair assessment from superiors<br>• Work demands affecting personal/home life<br>• Lack of support from superiors<br>• Age not related to EE<br>• Gender not related to EE   |

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| 45 | Medical and surgical residents at King Abdulaziz Medical City in KSA, between 15 and 31 May 2018.   | 200 /300 (67%) residents.<br>• 40% female.<br>• Mean age = 28 years.   | <u>MBI-HSS</u><br>• High EE >29<br>• High DP >11<br>• Low PA <34  | <u>Burnout</u><br>• High EE = 12.5%<br>• High DP = 51%<br>• Low PA= 31.5%   |
| 46 | Medical residents in a stress management course at Hamad Medical Corporation, in Qatar, in January 2015.  | 142/150 (95%) residents.<br>• 32% female.<br>• Age NA  | <u>AMI</u><br>High scores >9  | <u>Burnout</u><br>• EE = 10.6 (high)<br>• DP = 5.35 (low)<br>• PA= 14.09 (high)   |
| 47 | Residents at King Abdul-Aziz Medical City (KAMC), in KSA, in March 2005.  | 71/ 79 (90%) residents.<br>• 37% female.<br>• Mean age for junior= 26 years<br>• Mean age for senior = 29 years. | <u>MBI</u><br>• High EE >26<br>• High DP >14<br>• Low PA <31  | <u>Burnout</u><br>• EE = 41.8-48.7 (average =44.2)<br>• DP = 60-68 (average =65.2)<br>• PA = 35-50 (average=42.8)<br><br><u>Associated Features</u><br>• No significant relationship between level of resident (senior vs junior residents) and Burnout (note: junior residents have a mean age lower than senior).   |
| 48 | Plastic surgery residents in Riyadh, KSA, in March 2018.  | 29/37<br>44.8% female.<br>Mean age=NA  | <u>MBI-HSS</u><br>Burnout= High EE and D.<br>• High EE > 26<br>• High DP > 12<br>• Low PA < 32                    | <u>Prevalence of burnout= 37%</u><br>• High EE = 72% (mean score=31)<br>• High DP= 41% (mean score= 11)<br>• Low PA 42% (mean score= 33)<br><br><u>Associated features:</u><br>• PA was significantly higher in older residents ( $\geq 28$ years) compared with younger residents (<28 years)<br>• Smoking and exercise were significantly associated with DP<br>• Less satisfaction with career associated with more Burnout (EE and DP).<br>• Less satisfaction with income associated with more Burnout (EE and DP) |
| 49 | Residents in the Departments of Family and Internal Medicine at Prince Sultan Medical Military City and National Guard Hospital in Riyadh, KSA, between April and June 2014 | 130/NA(NA)<br>• 32% female.<br>• Mean age NA   | <u>MBI</u><br>• High EE > NA<br>• High DP > NA<br>• Low PA < NA   | • <u>High EE = 2.6%</u><br>• <u>High DP 44.4%</u><br>• <u>Low PA 75%</u>  |
| 50 | Orthopedic surgery residents in the Central, Western, and Eastern regions of Saudi Arabia in late September/early October 2018  | 142/301 (47.2%)<br>• 10% female.<br>• Mean age=28 years  | <u>MBI</u><br>Burnout= high in EE, High in D. and low in PA.<br>• High EE > 26<br>• High DP > 12<br>• Low PA < 32 | Prevalence of burnout = 56%<br>• High EE = 50%<br>• High DP 39.4%<br>• Low PA 39.4%<br><u>Associated features:</u><br>• Percentage of female with Burnout almost equal male.  |

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|    |   |              |  | <ul style="list-style-type: none"> <li>• Prevalence of Burnout syndrome increased with higher residency levels.</li> <li>• More than two-thirds of the sample reported that they were not satisfied with their life-work balance</li> <li>• Burnout in western region almost double that in central region</li> </ul>          |
| 71 | Residents graduating from Qatar emergency medicine residency training programme between 2000 and 2009 | 75/75 (100%) | A survey made by themselves<br>cut-scores=NA | <u>Associated features:</u> <ul style="list-style-type: none"> <li>• 97% of male residents have Burnout, in initial year of training</li> <li>• More females compared to males have Burnout in later years (55% vs 45%)</li> <li>• Higher Burnout rate in female EPs compared to males counterparts (22.6% vs 2.3%)</li> </ul> |

### Practicing Physicians

| Study | Design   | Sample   | Instrument  | Results (Burnout Prevalence and Associated Features)  |
|-------|--|--|---|---|
| 51    | Physicians at PHC centers, in Dubai, in 2015                                 | 102/NA (NA) PHC physicians.<br>• 71% female.<br>• Age = (58%) >40 years and (37%) 30-40 years. | <u>MBI</u><br>• High EE > NA<br>• High DP > NA<br>• Low PA <NA  | <u>Burnout</u><br>• High EE = 43%<br>• High DP = 14%<br>• Low PA = 44%  |
| 52    | Physicians in the PHC centers in Kuwait, between August 2010 and March 2011. | 200/378 (53%) physicians.<br>• 56% female.<br>• Age = (57%) 30-39 years and (28%) 40-49 years. | <u>MBI</u><br>• High EE > NA<br>• High DP > NA<br>• Low PA < NA | <u>Burnout</u> <ul style="list-style-type: none"> <li>• EE = Mean percent score of 37.1 ± 29.0%</li> <li>• D = Mean percent score of 21.0 ± 22.9%</li> <li>• PA = Mean percent score of 63.2± 26.4%</li> <li>• I = Mean percent score of 46.2± 29.9% on the involvement domain.</li> </ul> <u>Associated Features</u> <ul style="list-style-type: none"> <li>• Males, non-Kuwaitis, aged 40 or more, with no hobby and suffering from at least one chronic disease had more mean percent score EE.</li> <li>• General practitioners, working in a PHC center, holding only a bachelor degree and spending more than 10 years at work were significantly more likely to have EE.</li> <li>• Married, Kuwaiti, affiliated with family center, working in capital health area, specialists, having hobbies, and higher income physicians associated with high PA mean percent score.</li> <li>• Men had higher EE, DP and lower PA and involvement.</li> <li>• Single had significantly lower PA.</li> </ul> |

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| 53 | Physicians at healthcare centers, in Qatar, in 2010                                | 183/230 (80%) physicians.<br>• 49% female.<br>• Age = (52%) >44 years and (30%) 35-44 years. | <u>Astudillo and Mendinueta</u><br>Questionnaire.<br>Burnout > 19  | <u>Prevalence of Burnout Syndrome = 13%.</u><br><u>Associated Features</u><br>• Females (28%) GPs had higher Burnout syndrome than males (7%)<br>• 37.8% of Qatari GPs were Burned out, compared to 11.6% of the foreigner GPs.<br>• Burnout syndrome was negatively associated with years of experience and age.   |
| 54 | Physicians in PHC centers in Jeddah, KSA, Between Oct 2016 and Jan 2017.           | 246/266(92%) physicians<br>• 57% female.<br>• Mean age = 35 years.                           | <u>MBI</u><br>Burnout = High EE and High DP (>75percentile).<br>• High EE > NA<br>• High DP > NA<br>• Low PA < NA  | <u>Prevalence of Burnout = 25%</u><br>• Moderate to severe EE = 70%<br>• Moderate to severe DP = 26%<br>• Low PA = 12%  |
| 55 | Cross-sectional study.<br>Physicians at the PHCC in Qatar, published in July 2018. | 144 (90%) physicians responded.<br>• 35% female.<br>• Age= 60% >40 years.                    | <u>MBI</u><br>Burnout = high of any 2 dimensions.<br>• High EE > NA<br>• High DP > NA<br>• Low PA < NA             | <u>Prevalence of Burnout = 16%</u><br>• High EE = 12%<br>• High DP = 29%<br>• Low PA = 20%<br><u>Associated Features</u><br>• Social welfare is significantly related to Burnout.   |
| 56 | Physicians in RMH primary care centers, in Riyadh, KSA, in April 2010.             | 144/200 (72%) physicians.<br>• 39% female.<br>• Mean age = 37 years.                         | <u>MBI-HSS</u><br>Burnout = high EE, high DP and low PA<br>• High EE >26<br>• High DP >9<br>• Low PA <34           | <u>Scored high Burnout in all 3 dimensions= 2.78%</u><br><u>No Burnout in any dimension= 24%</u><br>• High EE = 53.5%<br>• High DP = 39%<br>• Low PA = 28.5%<br><u>Associated Features</u><br>• Having low job satisfaction (P< 0.001) with high EE<br>• Having an intention to change job (P= 0,001) with high EE<br>• Ages below 34 (P= 0.008) with high EE<br>• Taking psychotropic drugs (P= 0.015) with high DP<br>• Graduated in the last 5 years from medical school (P=0.021) with high DP<br>• Being married (P= 0.042) with low PA<br>• Being board qualified (P=0,036) with low PA<br>• Being non-smoker (P= 0.035) with low PA<br>• Burnout was more likely with increasing smoking and water bubble. |
| 57 | PCPs in Muscat, Oman, between March and May 2017.                                  | 197 (96%)<br>• 78% female.<br>• Age= between 30 and 39 years.                                | <u>MBI-HSS</u><br>• High EE > 25<br>• High DP > 8<br>• Low PA < 34<br><br>Burnout= High EE and high D. and Low PA. | <u>Prevalence of Burnout = 6.3%</u><br>• High EE= 17%<br>• High D.= 38%<br>• Low PA= 21%<br><u>Associated Features</u><br>• Working 40-80 hours/week had the higher risk of Burnout syndrome compared to working <20 hours/week.  |

| Mixed |   |  |  |   |
|-------|---|--|--|---|
| Study | Design  | Sample   | Instrument   | Results (Burnout Prevalence and Associated Features)  |
| 58    | Saudi Emergency Medicine Assembly (SEMA) conference, held in Riyadh, KSA, in 2015.                                  | 265/303 (87%).<br>• 16% female.<br>• Age = (61%) 25-34 years.<br>• 15 Service residents, 84 in EM program, 40 GPs and 126 Consultants. | <u>MBI-HSS</u><br>Burnout = high EE, high DP and low PA<br>• High EE >2<br>• High DP >1<br>• Low PA <4.2 | <u>Prevalence of Burnout Syndrome=13.4%</u><br>• High EE = 36%<br>• High DP = 51%<br>• Low PA = 40%<br><br><u>Associated Features</u><br>• No significant different between genders, age groups, job titles, or years of EM experience.<br>• There was a negative correlation between participant age and DP scores.  |
| 59    | King Fahad National Guard Hospital at King Abdulaziz Medical City in Riyadh, KSA between October and November 2010. | 348/NA (74%) physicians responded.<br>• 28% female.<br>• Mean age = 35.<br>• 54% consultants and 46% residents.                        | <u>MBI</u><br>Burnout = not provided<br>• High EE >26<br>• High DP >12<br>• Low PA <32                   | <u>Prevalence of Burnout Syndrome=70%</u><br>• High EE = 54%<br>• High DP = 35%<br>• Low PA = 33%<br><br><u>Associated Features</u><br>• Burnout group were significantly younger, female, unmarried status, resident, lower years in practice, job negatively affected their family life, and suffering from sleep deprivation or back pain.<br>• The Burnout prevalence across specialties was not statistically different.<br>• The factors independently associated with Burnout were back pain, sleep deprivation, resident and having a negative effect of practice on the family life. |
| 60    | Pediatric physicians in Jeddah, KSA was conducted over 3 consecutive months, in 2010.                               | 130/200 (65%) physicians.<br>• 55% female.<br>• Mean age = 30 years.<br>• Consultants (46%), residents (31%) and assistants (23%).     | <u>MBI</u><br>• Mild Burnout = (31-40)<br>• Moderate Burnout = (41-60)<br>• Severe Burnout >60           | <u>Mild Burnout =19%</u><br><u>Moderate Burnout =29%</u><br><u>Severe Burnout =34%</u><br><br><u>Associated Features</u><br>• Males, academic pediatricians and consultants had more severe Burnout.<br>• Age, marital status, years of practice, and income had no correlation with Burnout status.  |
| 61    | At the Armed Forces Hospital Southern Region, Khamis Mushyt, in Saudi Arabia between August and October 2012.       | 96 /105 (91%) physicians.<br>• 33% female.<br>• Age = (50%) 30-40 years.   | <u>MBI-HSS</u><br>Burnout = NA<br>• High EE > NA<br>• High DP > NA<br>• Low PA < NA                      | <u>Presence of Burnout in at least one dimension = 88.5%</u><br>• High EE = 69%<br>• High DP = 64%<br>• Low PA = 38.5%<br><br><u>Associated Features</u><br>• Depersonalization associated with being not married, not having children, less than 5 years of service.<br>• 50% reported their own department unnecessarily contributed significantly to their daily stress.   |

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| 62 | National Guard Health Affairs, Dammam, between January and February 2017.   | 95(66%) physicians.<br>• 38% female.<br>• Mean age = 40 years.                                | <u>A survey made by themselves</u><br><br>cut-scores=NA             | <u>Prevalence of burnout= 46% of respondents</u><br><br><u>Associated Features</u><br>• No significant association between Burnout and gender or specialities.   |
| 73 | Healthcare practitioner at ICU in Qatar, published august, 2015.  | 200/NA(NA)  | <u>MBI-HSS</u><br>• High EE > NA<br>• High DP > NA<br>• Low PA < NA | <u>Associated features:</u><br>• Physicians, nurses, and respiratory therapists were equally at risk.  |
| 72 | ER departments of hospitals in Abha and Khamis Mushait cities belonging to Ministry of Health, KSA, published february, 2019. | 95 physicians and 187 nurse.<br>• Gender of physicians NA.<br>• Average age of physicians NA. | <u>MBI</u><br>• High EE > 25<br>• High DP > 8<br>• Low PA < 34      | Physicians only:<br>• High EE = 81%<br>• High DP 24%<br>• Low PA 27%<br><br><u>Associated features:</u><br>• Nurses had higher EE compared to physicians p=0.004.  |
| 63 | Three hospitals on the Medical City University Campus in Baghdad, Iraq, in 2016.  | 310/336 (92%) physicians.<br>• 50% female.<br>• Mean age = 34.75 years                        | <u>MBI</u><br>• High EE > 26<br>• High DP > 9<br>• Low PA < 17      | <u>Burnout</u><br>• High EE = 0%. (54% had score 19-26)<br>• High DP = 79%<br>• Low PA = 17%<br><br><u>Associated Features</u><br>• No significant association between job satisfaction and Burnout.<br>• 65.5% favored leisure activities over spouse support and support from colleagues.      |
| 70 | At King Fahd Hospital of the University, AlKhobar, KSA, between Sept. 2003 and Oct. 2004.                                     | 69/102 (68%) orthopedics.<br>• Gender NA.<br>• Average age = 45.7 years.                      | <u>MBI</u><br>• High EE > NA<br>• High DP > NA<br>• Low PA < NA     | <u>Burnout</u><br>• High EE = 51%<br>• High DP = 59%<br>• Low PA = 17%<br><br><u>Associated Features</u><br>• Doctors working for the government hospitals had lower EE (p<0.05), lower DP (p<0.001) and higher PA (p<0.05) as compared to the private group.                                    |
| 64 | Main secondary care hospital, in Bahrain, in 2015   | 202/230 (88%) physicians.<br>• 39% female.<br>• Mean age = 36 years.                          | <u>MBI-HSS</u><br>• High EE > NA<br>• High DP > NA<br>• Low PA < NA | <u>Burnout</u><br>• High EE = 43%<br>• High DP = 27%<br>• Low PA = 52%<br><br><u>Associated Features</u><br>• >40 years old is less likely to experience a high level of EE and DP but they have a low level of PA.<br>• Marital status and gender has no statistical significance with Burnout. |

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| 65 | Emergency physicians at King Abdulaziz Medical City, Riyadh, KSA, in 2013.   | 53/72 (74%) physicians.<br>• 15% female.<br>• Age = (56%) 35–44 years.<br>• 36% adult ER Consultants, 19% pediatric ER consultants and 45% staff physicians. | <u>MBI-HSS</u><br>• High EE > NA<br>• High DP > NA<br>• Low PA < NA   | <u>Burnout</u><br>• High EE = 40%<br>• High DP = 40%<br>• Low PA = 32%<br><br><u>Associated Features</u><br>• Work overload followed by insufficient reward were the most important factors negatively affect their relationship to work.   |
| 66 | Psychiatric Hospital, Bahrain published in October 2009.   | 153/261 (58%).<br>• 52% female.<br>• Age: mostly in 26-37 years.<br>• 9.2% medical doctors and 78.5% nurses.   | <u>MBI</u><br>Burnout = high EE, high DP and low PA<br>• High EE > 25<br>• High DP > 8<br>• Low PA < 34                         | <u>Burnout of Medical doctors:</u><br>• EE= Mean score of 18<br>• D= Mean score of 4<br>• PA= Mean score of 39  |
| 67 | Oncology healthcare professionals at King Fahad Medical City Comprehensive Cancer Center, Riyadh, between June 2016 and June 2017. | 157/257 (63%).<br>• 61% female.<br>• Mean age = 35 years.<br>• 35% physicians, 54% nurses and 11% other health workers.                                      | <u>MBI-HSS</u><br>• High EE > NA<br>• High DP > NA<br>• Low PA < NA   | <u>Burnout</u><br>• High EE = 25.5%<br>• High DP = 29%<br>• Low PA = 27%<br><br><u>Associated Features</u><br>• The professional group with the highest prevalence of Burnout were physicians (44%), followed by nurses (29%), and other health professionals (27%)   |
| 68 | Four main government hospitals in Sana'a City, Yemen, between December 2006 to July 2007.  | 563 (70.4%) physicians responded.<br>• 41% female<br>• Mean age = 33 years.  | <u>MBI (translated to Arabic)</u><br>Burnout = high EE, high DP and low PA<br>• High EE > 26<br>• High DP > 12<br>• Low PA < 32 | <u>Prevalence of burnout = 11.7%</u><br>• High EE = 63.2%<br>• High DP 19.4%<br>• Low PA 33%<br><br><u>Associated Features</u><br>• Burnout was higher in those who did not chew khat, and those with job uncertainty and insecurity, disturbance of home/family life by work feeling of isolation, dealing with patient's psychosocial problems, long working hours and psychological morbidity. |
| 69 | Faculty members at medical, dental and applied medical sciences colleges, in Majmaah University, KSA, published in May 2017        | 90 faculty members responded.<br>• 0% female.<br>• Mean age = 41 years.  | <u>MBI and DASS 21</u><br>• High EE > NA<br>• High DP > NA<br>• Low PA < NA   | <u>Burnout of Medical faculty:</u><br>• EE= 23.2<br>• D = 6.7<br>• PA = 40.1<br><br><u>Associated Features</u><br>• Stress in the medical section (10) > applied medical sciences (8.76) and dental (7.51) (P= <0.001).<br>• All three groups reported presence of moderate amount of Burnout, with higher scores seen in applied sciences group and least among the dental group.                |

## Human subjects

No ethical approval was required as the literature review is based on published data.

## Outcome measures

### Burnout

The Maslach Burnout Inventory (MBI) was most frequently employed measure of burnout. Psychometric analyses conducted on the MBI have demonstrated high reliability and validity [24-26]. The MBI contains 22 items that measure the cumulative effects of work-related pressure in three subscales: the Emotional Exhaustion (EE) subscale assesses feelings of being emotionally overextended and exhausted by one's work (e.g., intense emotional tiredness); the Depersonalization (DP) subscale measures a negative, cynical, and impersonal attitude towards recipients of one's service, care, treatment or instruction (e.g., patients); and the Personal Accomplishment (PA) subscale assesses feelings of competence and successful achievement in one's work, with low personal accomplishment corresponding to demotivation, loss of self-confidence, and self-depreciation in relation to work. The PA is negatively correlated with the other 2 subscales. Each question is assessed on a score ranging from 0 (not at all) to 5 (yes, absolutely). Several studies used a slightly modified version of the MBI, the MBI-Healthcare Professionals (MBI-HSS) is often used to detect burnout in clinicians [17]. The Abbreviated Maslach Inventory (AMI) is shortened, 12-item version of the MBI-HSS [27].

Despite being the most validated measures in the burnout literature, cutoff scores for the MBI and its various offshoots lack validity; consequently, studies do not consistently apply the same cutoffs, making comparisons between studies challenging [28].

One study used the Copenhagen Burnout Inventory (CBI) [29]. Another study used Astudillo and Mendinueta Questionnaire (AMQ) to measure burnout [30]. Two studies used their own unique definitions of burnout [31,32].

### Other factors associated with burnout

The Patient Health Questionnaire (PHQ-9) is a self-report scale designed to measure the intensity of depressive symptoms [33]. Each of the 9 DSM-IV depression criteria is rated on a scale of "0" (not at all) to "3" (nearly every day). As a severity measure, PHQ-9 scores range from 0 to 27. A score > 15 is consistent with moderate to severe depression. The Depression, Anxiety and Stress Scale (DASS-21) is a 21-item self-report questionnaire designed to measure the severity of the core symptoms of depression, anxiety and stress [34]. The Perfectionistic Self-Presentation Scale (PSPS) was used to measure perfectionism [35].

## Results

Out of 195 potential publications initially identified in the literature search, 36 duplicates were removed. Thereafter, we screened 159 abstracts and excluded 106 excluded for not satisfying the inclusion criteria. Of the remaining 53 studies, 12 were excluded: 4 due to inability to access the full text article; 5 because medical doctors were not included in the sample or not separated from oth-

er cohorts in outcomes, 2 were completed outside the specified geographic region; and 1 did not specify how burnout was defined. This resulted in a total of 41 studies being chosen for this systematic review. Figure 1 displays the flow chart of publications selected for inclusion in this review.

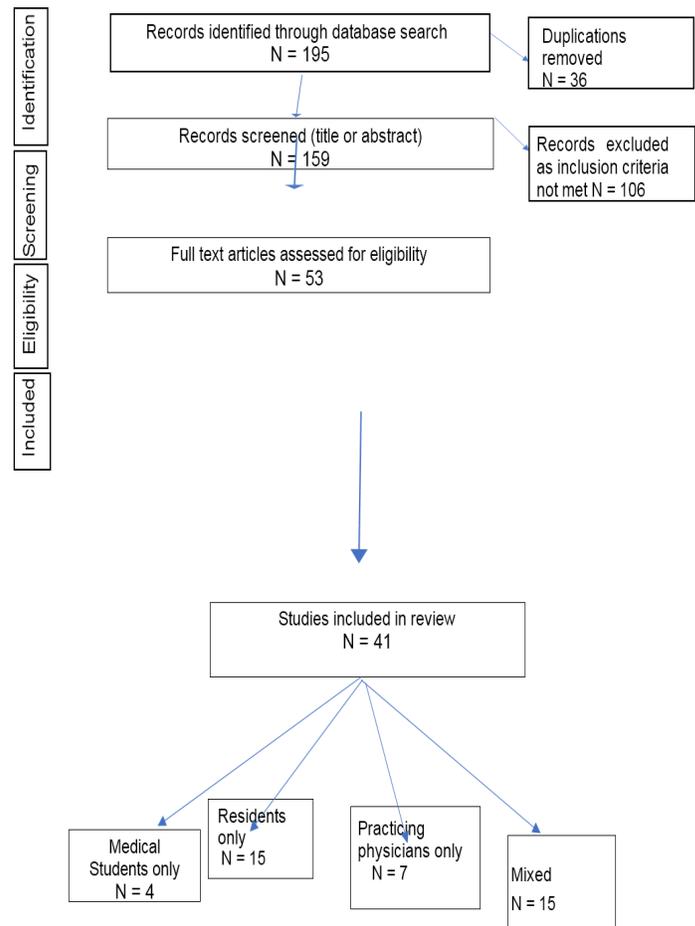


Figure 1: Flow chart

The 41 included studies in this review are summarized in Table 1. The majority of the studies (65.9%) were conducted in Saudi Arabia. When information on gender provided 3<sub>3</sub>-6<sub>9</sub>, 44.3% were female. When mean age was provided 3<sub>3</sub>-3<sub>6</sub>, 3<sub>8</sub>-4<sub>0</sub>, 4<sub>2</sub>, 4<sub>5</sub>, 4<sub>7</sub>, 4<sub>9</sub>, 5<sub>0</sub>, 5<sub>3</sub>, 5<sub>4</sub>, 5<sub>6</sub>, 5<sub>7</sub>, 5<sub>9</sub>, 6<sub>0</sub>, 6<sub>2</sub>-6<sub>4</sub>, 6<sub>6</sub>-7<sub>0</sub>, the overall mean age was 31.9 years old.

### Overall Prevalence Rates and MBI Subscale Rates

In terms of burnout, 22/41 (54%) studies specifically adopted a categorical definition of burnout and reported prevalence rates. Some studies defined burnout in relation to high (EE and DP) or low (PA) scores on only 1 subscale, some on 2 subscales and some

on all 3. Adding to the complexity, studies used a wide range of cut-off scores for each subscale to define a high or low score on that subscale. The ranges of burnout prevalence related to the use of 1, 2, or 3 burnout subscale scores as cut-offs were 0%-81%, 14%-84%, 12%-84% respectively.

### Medical Students

Only four studies describing medical student burnout in the Gulf region were found: three from KSA and one from Oman [35-38]. The MBI was used to measure burnout in three of the studies while the CBI was used in the 4th [35-38]. Across three studies consisting of only medical students and with clearly reported prevalence rates the overall burnout rate for medical students was 47.5% [35-38]. The range varied from 7.4% to 68% [35-38]. However, it must be noted that criteria for threshold scores on each subscale varied from study to study.

### Demographic factors

Demographic factors found to be associated with burnout in medical students included only age and gender. In terms of age, one study showed that younger students reported more burnout, while the other did not find a relationship between burnout and age [35,38]. In terms of gender, one study found that females reported higher EE and DP, another study found females report lower burnout and one study found no difference between males and females [36-38].

### Other factors associated with burnout

One study found a positive relationship between burnout and depression as measured by the PHQ-9; another found no relationship between burnout and extracurricular activities and a third found no relationship between burnout and various measures of perfectionism [35,36,38].

### Residents

We found fifteen studies with data on burnout among residents in training. Of these, twelve came from KSA, two from Qatar and one from UAE [32,39-52]. The MBI was used to measure burnout in 13 studies, the AMI was used in one study and one study assessed burnout using a survey made by themselves [32,35,39-50,52]. The PHQ-9 was used to measure depression [52]. Across nine studies that provided prevalence rates, the overall burnout rate for residents was 41.5%. The range varied from 6% to 81% [41,43].

### Demographic factors

Demographic factors associated with burnout in residents included age, gender and marital status. In terms of age, one study reported older residents had higher EE and lower PA, another found younger residents with lower PA and a third reported age had no effect on burnout [43,45,46]. In terms of gender, six studies reported no significant difference between males and females in burnout, one found females had more burnout, another reported female had higher scores on the EE and DP subscales compared to males and one found female residents had more burnout than male residents in later years of training [32,39,41-45,50,52]. Regarding marital

status, one study reported married residents had more burnout than unmarried residents while another study found married or engaged residents with higher EE and DP with no difference in PA [41,42].

### Other factors associated with burnout

One study assessed depression using the PHQ-9 and found that 16% of residents were depressed; 83% of those with depression also met criteria for burnout [52]. More years working in the field was correlated with higher DP while working in the same center more than five years was associated with lower PA [43]. Another study found a positive correlation between days on-call and EE, and one reported higher burnout related to shift work, tests/examinations, large amount of content to be learned, unfair assessment from superiors, work demands affecting personal/home life and lack of support from superiors [44,45]. One study reported no significant relationship between level of resident (senior vs junior residents) and burnout, while another reported higher burnout with higher residency level [47,50]. Smoking and exercise were significantly associated with higher DP, while satisfaction with career or income was associated with higher EE and DP [39]. Residents in the western region of KSA had almost double the rate of burnout compared to residents of the central region [50].

### Practicing Physicians

There were seven studies addressing physicians in primary health care (PHC) [53-59]. These studies came from five countries: KSA; UAE; Qatar; Oman and Kuwait. All of them used the MBI or MBI-HSS except one, which used AAM [55]. In the five studies consisting only of practicing physicians that provided prevalence rates, the overall burnout rate among practicing physicians was 12.6% (range between 2.7% and 25%) [55-59]. Overall, the results revealed a wide range of the percentage of physicians with high EE and PA (from 11% to 70% and 12% to 63% respectively) and a narrower range for DP (13%-38%).

### Demographic factors

Demographic factors associated with burnout in PHC doctors included age, gender and marital status. Findings did not provide a consistent pattern of results. One study reported female physicians had more burnout, while another did not find a relationship between gender and burnout [55,58]. One study reported high EE in males compared to females [54]. In regards to age, two studies mentioned more burnout in younger physicians (<35 years), while another reported higher EE in older physicians (> 40 years) [54,55,58]. In a related feature, 2 studies that mentioned results concerning year of graduation reported higher burnout in those who graduated more recently [55,58]. One study found being married was associated with higher burnout and lower PA, while another reported that marriage was associated with higher PA [54,58].

### Other factors associated with burnout

Two studies demonstrated a negative relationship between health condition and burnout domains. Specifically, having chronic disease, taking psychotropic drugs, smoking and sleeping less than 6 hours were associated with burnout [54,58]. On the other hand,

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participating in sports and having hobbies were associated with less burnout [53,54]. Social problems also were found to be related to burnout [57]. In terms of salary, high income was associated with higher personal accomplishment; however, another study showed income had only a weak association with burnout [54,58]. The latter study also reported that burnout was associated with being dissatisfied with work and intending to change jobs [58]. With regard to work environment, one study reported a weak association between workload and burnout while another showed more work hours to be associated with burnout [58,59]. One study looked at specific environmental factors and showed that disorganized patient flow to clinics, more paper work, and less cooperative colleagues were associated with high EE. Moreover, patient pressure and violence were associated with overall burnout [56].

### Mixed Groups

Fifteen studies provided data on burnout among mixed groups of medical students, residents and practicing physicians. Of these, ten came from KSA, two from Bahrain, one from Qatar, one from Iraq and one from Yemen [31,60-72].

The MBI or MBI-HSS was used to measure burnout in fourteen studies, the DASS in one study and one assessed burnout using a self-made survey [31, 60-73]. In the six studies consisting of different categories of physicians that provided prevalence rates, the overall burnout rate was 44% [31,60-63,72]. The range varied from 11.7% to 88.5% [63,72].

### Demographic factors

Demographic factors associated with burnout included age, gender and marital status. In terms of age, one study reported being older than 40 years was associated with high EE and D, but lower PA [69]. Another found younger age was associated with more burnout and two studies reported age has no significant effect on burnout [60-62]. In terms of gender, three studies reported no significant difference between males and females in burnout, while one found that female had more burnout and another reported male resident had more burnout [31,60-62,69]. Regarding marital status, two studies reported being unmarried was associated with more burnout while two other studies reported no significant relationship between marital status and burnout [61-63,69].

### Other factors associated with burnout

One study found burnout was more prevalent among residents than consultants, those with fewer years in practice, those who felt work was negatively affecting their family life, and those who were suffering from sleep deprivation or back pain [61]. One study assessed burnout among pediatricians and reported more burnout in academic pediatricians working in a university setting than in those working at other hospitals, and consultants were more likely to experience severe burnout compared to residents and assistants [62]. One study found burnout was lower among orthopedic physicians working in government hospitals compared to those working in the private sector [67]. One study reported work overload

followed by insufficient rewards were the most important factors negatively affecting their relationship to work [64]. A study in Yemen reported burnout higher in those who: did not chew khat, experienced job uncertainty and insecurity, reported a disturbance of home/family life related to work, felt isolated, dealt with patients' psychosocial problems and worked long hours; this study also noted an association between burnout and psychological morbidity [72]. Three studies compared physicians to other health practitioners in regards to burnout; one found physicians, nurses, and respiratory therapists were equally at risk, another found nurses had higher EE compared to physicians, and the third reported physicians had the highest prevalence of burnout (44%), followed by nurses (29%), and other health professionals (27%) [68,70,73,]. One study reported stress in medical students was higher than applied medical sciences and dental students; all three groups reported moderate amounts of burnout, with the applied sciences group showing higher burnout scores than the medical or dental students [66].

### Discussion

The results of this systematic review clearly demonstrate the increased recognition of, and interest in, physician burnout in the Gulf Region. For the most part, our findings parallel reports from other regions around the world. Overall, the broad range and mean prevalence rates reported in this review are in keeping with those reported elsewhere [12,19]. With the exception of one study from Yemen that described lower burnout being associated with chewing khat, there were no culturally specific factors taken into consideration that would differentiate burnout-related features in the Gulf Region from reports on physician burnout around the world [73]. Several of our key findings are highlighted below.

First, the prevalence of burnout depends on how it is defined and measured. The majority of the studies used an inventory based on the MBI, which considers burnout to consist of 3 domains: emotional exhaustion (EE), depersonalization (DP), and low personal accomplishment (PA) [74]. Yet even among studies using the MBI (or one of its variants) do not provide uniform criteria to categorize burnout [17]. Some require all three subscales to be elevated, while others require only one or two; some use mean scores, albeit the cut-offs vary from study to study, and others select only a single item from one or two of the subscales. Thus, the variable rates found in this, and in other reviews, is no surprise [17,22]. That said, the variability between studies raises a question of whether any prevalence estimate cited for burnout can be meaningfully interpreted. Nonetheless, the generally high rates reported, on average between 30-50% in each cohort, clearly point to the importance of increased attention to physician mental health and well-being. This review indicates that a more consistent definition of burnout and improved assessment tools may be an important step towards early recognition and prevention of burnout.

It should be noted that burnout is not mentioned in the DSM-5, albeit there is a category called "Occupational Problems" (V62.29).

The 11th Revision of the International Classification of Diseases (ICD-11), on the other hand, recognizes burnout as an occupational phenomenon. It is not classified as a medical condition. Rather, it is described in the chapter “Factors influencing health status or contact with health service”-which includes reasons for which people contact health services but that are not classed as illnesses or health conditions. Paralleling the MBI’s conceptualization of burnout, the clinical description of “Burnout” in ICD-11 is: “A syndrome conceptualized as resulting from chronic workplace stress that has not been successfully managed. It is characterized by three dimensions:

- 1) feelings of energy depletion or exhaustion;
- 2) increased mental distance from one’s job, or feelings of negativism or cynicism related to one’s job; and 3) reduced professional efficacy. This broad recognition and heuristic definition of this seemingly highly prevalent and distressing, disruptive condition should help facilitate further research and the development of much needed evidence-based prevention/management strategies.

Second, despite several attempts to elucidate risk factors, more questions than answers remain. For the most part, findings related to risk factors are inconsistent. This includes demographic factors, such as gender, age and marital status. For example, among medical students one study found lower burnout in females, another one found no difference between males and females and another study found that females have higher EE and DP 33-35. Among residents, reports varied between no significant difference between males and females to more burnout among females than males, particularly in later years of training. Similar inconsistencies were reported among practicing physicians and mixed groups. The effects of age on burnout were equally inconsistent. Young age is a risk factor in some studies, being older in others and no differences between age groups in other reports. Similarly, inconsistent, being married was associated with higher burnout in two studies of residents and one study of practicing physicians while two other studies of mixed groups found higher burnout rates among unmarried physicians.

Work factors may play a role, but for the most part findings were isolated without clear replication. Reports suggested that working in the same center for long time, time on-call, shift work, tests/examinations, unfair assessment from superiors, lack of support from superiors, work demands affecting personal/home life, less satisfaction with career, less satisfaction with income, disorganized patient flow to clinics, patient pressure and violence, more paper work, less cooperative colleagues and job insecurity all may be related to burnout. Personal factors like having chronic disease, taking psychotropic drugs, smoking, sleeping less than 6 hours, suffering from sleep deprivation, back pain or having social problems also were associated with burnout, while participating in sports and having hobbies seemed protective [53,54,58,61,72].

Third, burnout is a serious condition, associated with physical, psychological and occupational consequences and our findings

parallel reports from other regions of the globe [11-13,15]. Physical consequences that were reported included: hypercholesterolemia, type 2 diabetes, coronary heart disease, hospitalization due to cardiovascular disorder, musculoskeletal pain, changes in pain experiences, prolonged fatigue, headaches, gastrointestinal issues, respiratory problems, severe injuries and mortality below the age of 45 years. The psychological effects included: insomnia, depressive symptoms, and use of psychotropics for depression and hospitalization for mental disorders. Occupational outcomes included: job dissatisfaction, absenteeism and new disability pension were identified as occupational outcomes.

Certain limitations of this review are important to mention. First, participant response rates varied, making it challenging to generalize from findings. Participant bias may be present; on the one hand, those with burnout might be more interested in taking the survey while, on the other hand, they may feel more intimidated or too fatigued. Second, the prevalence of burnout can vary according to the learning context, type of burnout scale used, and specific threshold criteria adopted even within the same scale. Third, future studies may want to examine other correlates of burnout not included in the studies reviewed here, such as stigma related to the discipline, personality factors, concurrent life events and aspects of the learning environment (e.g. perception of role autonomy, social support) which would enrich our understanding and suggest potential avenues of intervention. Fourth, all studies reviewed here are cross-sectional in design, and longitudinal studies would be warranted to examine the changes in burnout rate and relationship with other demographic factors, training, work, home and learner factors over time.

## Conclusions

This systematic review of burnout in the Gulf Region confirms the universality of physician burnout regardless of age, gender, race, geography, religion, cultural background or positions in the medical job hierarchy. Burnout has reached epidemic proportions among physicians at each level of the medical development journey, from medical students, residents, specialists and consultants. The serious study of physician burnout is in its infancy and there is not yet a uniformly agreed consensus on how to best define or characterize burnout [17]. Yet it is clear that burnout is a serious condition which effects not only physicians, but their families, patients and the larger society as well. Burnout is associated with myriad “risk” factors and affects physical, psychological and professional functioning and performance. It compromises patient care, leads to poor patient outcomes, is a major contributor to physician turnover and drives up healthcare costs. Thus, prevention of physician burnout must be not only each physician’s concern, but also an organizational and societal imperative [75].

## List of Abbreviations

**AMI** – Abbreviated Maslach Inventory

**AMQ** - Astudillo and Mendinueta Questionnaire

**CBI** - Copenhagen Burnout Inventory

**DASS-21** - Depression Anxiety Stress Scale  
**DP** – Depersonalization  
**EE** – Emotional Exhaustion  
**MBI** –Maslach Burnout Inventory  
**MBI-HSS** – Maslach Burnout Inventory-Healthcare Professionals  
**N/A** – Not Available  
**PA** - Personal Accomplishment  
**PHQ-9** -Patient Health Questionnaire  
**PSPS** - Perfectionistic Self-Presentation Scale

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### Scale Abbreviations

**AMI** – Abbreviated Maslach Inventory; **AMQ** - Astudillo and Mendinueta Questionnaire; **CBI** - Copenhagen Burnout Inventory; **DASS-21** - Depression Anxiety Stress Scale; **MBI** – Maslach Burnout Inventory; **MBI-HSS** – Maslach Burnout Inventory-Healthcare Professionals; **N/A** – Not Available; **PHQ-9** -Patient Health Questionnaire; **PSPS** - Perfectionistic Self-Presentation Scale

### MBI Subscale Abbreviations

**DP** – Depersonalization; **EE** – Emotional Exhaustion; **PA** - Personal Accomplishment

### References

1. Lee RT, Seo B, Hladkyj S, Lovell BL, Schwartzmann L (2013) Correlates of physician burnout across regions and specialties: a meta-analysis. *Hum Resour Health* 11: 48.
2. Torchiaro GC (2014) Evaluation of anesthesiologists' occupational well-being around the world. *Occup Well- Anesthesiol* 22251: 15.
3. Sabitova A, Sajun SZ, Nicholson S, Mosler F, Priebe S (2019) Job morale of physicians in low-income and middle-income countries: a systematic literature review of qualitative studies. *BMJ Open* 9: e028657.
4. Dewa CS, Loong D, Bonato S, Thanh NX, Jacobs P (2014) How does burnout affect physician productivity? A systematic literature review. *BMC Health Serv Res* 14: 325.
5. Dyrbye L, Shanafelt T (2016) A narrative review on burnout experienced by medical students and residents. *Med Educ* 50: 132-149.
6. Dyrbye LN, West CP, Satele D, Sonja Boone, Litjen Tan, et al. (2014) Burnout among US medical students, residents, and early career physicians relative to the general US population. *Acad Med* 89: 443-451.
7. Bridgeman PJ, Bridgeman MB, Barone J (2018) Burnout syndrome among healthcare professionals. *Bull Am Soc Hosp Pharm* 75: 147-152.
8. Grover S, Adarsh H, Naskar C, Varadharajan N (2018) Physician burnout: A review. *J Ment Health Hum Behav* 23: 78-85.
9. West CP, Dyrbye LN, Shanafelt TD (2018) Physician burnout: contributors, consequences and solutions. *J Intern Med* 283: 516-529.
10. Dyrbye LN, Thomas MR, Power DV, Steven Durning, Christine Moutier, et al. (2010) Burnout and serious thoughts of dropping out of medical school: a multi-institutional study. *Acad Med* 85: 94-102.
11. Shanafelt TD, Bradley KA, Wipf JE, Back AL (2002) Burnout and self-reported patient care in an internal medicine residency program. *Ann Intern Med* 136: 358-367.
12. Parsa-Parsi RW (2017) The revised Declaration of Geneva: a modern-day physician's pledge. *JAMA* 318: 1971-1972.
13. Van der Heijden F, Dillingh G, Bakker A, Prins J (2008) Suicidal thoughts among medical residents with burnout. *Arch Suicide Res* 12: 344-346.
14. Shanafelt TD, Noseworthy JH (2017) Executive leadership and physician well-being: nine organizational strategies to promote engagement and reduce burnout. In: *Mayo Clinic Proceedings*. Elsevier 92: 129-146.
15. 7 steps to prevent burnout in your practice. American Medical Association. <http://www.ama-assn.org/ama/ama-wire/post/7-steps-prevent-burnout-practice>.
16. West CP, Dyrbye LN, Erwin PJ, Shanafelt TD (2016) Interventions to prevent and reduce physician burnout: a systematic review and meta-analysis. *The Lancet* 388: 2272-2281.
17. Rotenstein LS, Torre M, Ramos MA, et al. (2018) Prevalence of burnout among physicians: a systematic review. *JAMA* 320: 1131-1150.
18. Lo D, Wu F, Chan M, Chu R, Li D (2018) A systematic review of burnout among doctors in China: a cultural perspective. *Asia Pac Fam Med* 17: 3.
19. Al-Dubai SAR, Ganasegeran K, Perianayagam W, Rampal KG (2013) Emotional burnout, perceived sources of job stress, professional fulfillment, and engagement among medical residents in Malaysia. *Sci World J*.
20. Suñer-Soler R, Grau-Martín A, Flichtentrei D, MariaPrats, Florenci Braga et al. (2014) The consequences of burnout syndrome among healthcare professionals in Spain and Spanish speaking Latin American countries. *Burn Res* 1: 82-89.
21. Perry L, Rech D, Mavhu W, Sasha Frade, Michael D Machaku, et al. (2014) Work experience, job-fulfillment and burnout among VMMC providers in Kenya, South Africa, Tanzania and Zimbabwe. *PLoS One* 9: e84215.
22. Elbarazi I, Loney T, Yousef S, Elias A (2017) Prevalence of and factors associated with burnout among health care professionals in Arab countries: a systematic review. *BMC Health Serv Res* 17: 491.
23. Miron RW, Malatskey L, Rosen LJ (2019) Health-related behaviours and perceptions among physicians: results from a cross-sectional study in Israel. *BMJ Open* 9: e031353.
24. Cordes CL, Dougherty TW (1993) A review and an integration of research on job burnout. *Acad Manage Rev* 18: 621-656.
25. Schaufeli W, Enzmann D (1998) *The Burnout Companion to Study and Practice: A Critical Analysis*. 1st Edition. CRC Press.

26. Maslach C, Jackson SE (1981) The Measurement of Experienced Burnout. *J Occup Behav* 2: 99-113.
27. Gabbe S G, Melville J, Mandel L, Walker E (2002) Burnout in chairs of obstetrics and gynecology: Diagnosis, treatment, and prevention: Presidential address. *Am J Obstet. Gynecol* 186: 601-612.
28. Lim W Y, Ong J, Ong S, Hao Y, Abdullah H R, et al. (2020) The Abbreviated Maslach Burnout Inventory Can Overestimate Burnout: A Study of Anesthesiology Residents. *Journal of Clinical Medicine* 9: 61.
29. Kristensen TS, Borritz M, Villadsen E, Christensen KB (2005) The Copenhagen Burnout Inventory: A new tool for the assessment of burnout. *Work Stress* 19: 192-207.
30. Astudillo W, Mendinueta C (1996) Exhaustion syndrome in palliative care. *Support Care Cancer* 4: 408-415.
31. Al-Shuhail AS, Al-Saleh S, Al-saleh SS, Elhassan I, Wajid S (2017) Prevalence of Burnout among National Guard Health Affairs Physicians in Dammam, Saudi Arabia - A Cross-sectional Study. *Asian J Pharm* 11: S924-S929.
32. Aziz AA, Kahlout BH, Bashir K (2018) Female Physicians Suffer a Higher Burnout Rate: A 10-Year Experience of the Qatar EM Residency Training Programme. *JCPSP-J Coll PHYSICIANS Surg Pak* 28: 651-652.
33. Kroenke K, Spitzer RL, Williams JB (2001) The PHQ-9: validity of a brief depression severity measure. *J Gen Intern Med* 16: 606-613.
34. Crăciun B, Craiovan PM, Crăciun A (2015) Perceived stress and strategic approach to coping among health professionals in private practice. *Procedia-Soc Behav Sci* 187: 374-378.
35. Aboalshamat K, Alzahrani M, Rabie N, Rahaf Alharbi, Roaa Joudah, et al. (2017) The relationship between burnout and perfectionism in medical and dental students in Saudi Arabia. *Journal of Dental Specialities* 5: 122-127.
36. Almalki SA, Almojali AI, Alothman AS, Masuadi EM, Alaqeel MK (2017) Burnout and its association with extracurricular activities among medical students in Saudi Arabia. *Int J Med Educ* 8: 144-150.
37. Altannir Y, Alnajjar W, Ahmad SO, Mustafa Altannir, Fouad Yousuf, et al. (2019) Assessment of burnout in medical undergraduate students in Riyadh, Saudi Arabia. *BMC Med Educ* 19.
38. Al-Alawi M, Al-Sinawi H, Al-Qubtan A, Jaber Al-Lawati, Assad Al-Habsi, et al. Prevalence and determinants of burnout Syndrome and Depression among medical students at Sultan Qaboos University: A cross-sectional analytical study from Oman. *Arch Environ Occup Health* 74: 130-139.
39. Aldrees T, Badri M, Islam T, Alqahtani K (2015) Burnout Among Otolaryngology Residents in Saudi Arabia: A Multi-center Study. *J Surg Educ* 72: 844-848.
40. Aldrees T, Hassouneh B, Alabdulkarim A, Loujin Asad, Saleh Alqaryan, et al. (2017) Burnout among plastic surgery residents. National survey in Saudi Arabia. *Saudi Med J* 38: 832-836.
41. Hameed TK, Masuadi E, Al Asmary NA, Al-Anzi FG, Al Dubayee MS (2018) A study of resident duty hours and burnout in a sample of Saudi residents. *BMC Med Educ* 18: 180.
42. Jamjoom R, Park Y (2018) Assessment of pediatric resident's burnout in a tertiary academic centre. *Saudi Med J* 39: 296-300.
43. Al Sareai NS, Al Khaldi YM, Mostafa OA, Abdel Fattah MM (2013) Magnitude and risk factors for burnout among primary health care physicians in Asir province, Saudi Arabia. *East Mediterr Health J* 19: 426-434.
44. Alotaibi AK, Alsalam A, Alruwaili F, Almubarak A, Alhamzah A, et al. (2019) Burnout during ophthalmology residency training: A national survey in Saudi Arabia. *Saudi J Ophthalmol* 33: 130-134.
45. Aldubai SamiAR, Aljohani A, Alghamdi A, Alghamdi K, Ganasegeran K, et al. (2019) Prevalence and associated factors of burnout among family medicine residents in Al Madina, Saudi Arabia. *J Fam Med Prim Care* 8: 657.
46. Alyamani A, Alyamani L, Altheneyan F, Aldhali S, Albaker K, et al. (2018) Prevalence of Burnout among Residents at King Abdulaziz Medical City in Riyadh, Saudi Arabia. *Int J Med Res Health Sci* 7: 37-40.
47. Rahemi J, Saadani M, Kinsara A (2006) Burnout Syndrome among Saudi medical residents: A controlled study. *Curr Psychiatr* 13: 7-9.
48. Bin Dahmash A, Alhadlaq AS, Alhujayri AK, Alkholaifi F, Alosaimi NA (2019) Emotional Intelligence and Burnout in Plastic Surgery Residents: Is There a Relationship? *Plast Reconstr Surg Glob Open* 7: e2057.
49. Alfaleh HM (2017) Burnout among Saudi board residents: comparison between family medicine and internal medicine. *International Journal of Medicine in Developing Countries* 1: 11-17.
50. Alsheikh KA, Alhabradi FA, Almalik FF, Alsalam AA, Ahmed FE, et al. (2019) Burnout syndrome among orthopedic surgery residents in Saudi Arabia: A multicenter study. *J Musculoskel-et Surg Res* 3: 184.
51. Afana A, Ghannam J, Ho E, Al-Khal A, Al-Arab B, et al. (2017) Burnout and sources of stress among medical residents at Hamad Medical Corporation, Qatar. *East Mediterr Health J* 23: 40-46.
52. Abdulrahman M, Farooq M, Al Kharmiri A, Al Marzooqi F, Carrick F (2018) Burnout and depression among medical residents in the United Arab Emirates: A Multicenter study. *J Fam Med Prim Care* 7: 435-441.
53. Hussein H Y, Al Faisal W, Wasfy A, Monsef N A., Abdul-Rahim W M S, et al. (2015) Burnout among primary health care physicians in Dubai health authority Dubai-UAE. *Public Health Journal* 1: 24-27.
54. Abdulghafour YA, Bo-hamra AM, Al-Randi MS, Kamel MI, El-Shazly MK (2011) Burnout syndrome among physicians working in primary health care centers in Kuwait. *Alex J Med* 47: 351-357.
55. Abdulla L, Al-Qahtani D, Al-Kuwari M (2011) Prevalence and determinants of burnout syndrome among primary health-care physicians in Qatar. *South Afr Fam Pract* 53: 380-383.
56. Bawakid K, Abdulrashid O, Mandoura N, Hassan B Usman, Adel Ibrahim, et al. (2017) Burnout of Physicians Working in Primary Health Care Centers under Ministry of Health Jeddah, Saudi Arabia. *Cureus* 9: e1877.
57. Salem M, Taher M, Alsaadi H (2018) Prevalence and Deter-

- minants of Burnout among Primary Healthcare Physicians in Qatar. *World Fam Med Journal Middle East J Fam Med* 16: 22-28.
58. Selaihem A (2013) Prevalence of burnout amongst physicians working in primary care in Riyadh military hospital, Saudi Arabia. *Int J Med Sci Public Health* 2: 410.
59. Al-Hashemi T, Al-Huseini S, Al-Alawi M, Naser Al-Balushi , Hamed Al-Senawi, et al. (2019) Burnout Syndrome Among Primary Care Physicians in Oman. *Oman Med J* 34: 205.
60. Alsaawi A, Alrajhi K, Albaiz S, Mohammed Alsultan, Majid Alsalamah, et al. (2014) Risk of burnout among emergency physicians at a tertiary care centre in Saudi Arabia. *J Hosp Adm* 3.
61. Aldrees TM, Aleissa S, Zamakhshary M, Badri M, Sadat-Ali M (2013) Physician well-being: prevalence of burnout and associated risk factors in a tertiary hospital, Riyadh, Saudi Arabia. *Ann Saudi Med* 33: 451-456.
62. Al-Youbi RA, Jan MM (2013) Burnout Syndrome in Pediatric Practice. *Oman Med J* 28: 252-254.
63. Agha A, Mordy A, Anwar E, Saleh N, Rashid I, et al. (2015) Burnout among middle-grade doctors of tertiary care hospital in Saudi Arabia. *Work* 51: 839-847.
64. Alsaawi A, Alrajhi K, AlRasheed N, AlSabhan A, AlTamimi D (2019) Burnout among Emergency Physicians in Saudi Arabia: A Cross-sectional Study. *Journal of Health Informatics in Developing Countries* 13.
65. Jahrami H (2009) A Survey of Burnout of the Mental Health Occupational Therapy Staff in the Psychiatric Hospital, Bahrain. *Br J Occup Ther* 72: 458-464.
66. Abdulrahman A Al-Atram (2017) Stress, Burn Out, Anxiety and Depression among Health Professionals of Majmaah University. *Majmaah Journal of Health Sciences* 5: 56.
67. Sadat-Ali M, Al-Habdan IM, Al-Dakheel DA, Shriyan D (2005) Are orthopedic surgeons prone to burnout? *Saudi Med J* 26: 1180-1182.
68. Alqahtani AM, Awadalla NJ, Alsaleem SA, Alsamghan AS, Alsaleem MA, et al. (2019) Burnout Syndrome among Emergency Physicians and Nurses in Abha and Khamis Mushait Cities, Aseer Region, Southwestern Saudi Arabia. *Sci World J* 2019: 1-14.
69. Hasan HI, Nooh Y, Alsayyad AS (2015) Prevalence and factors affecting burnout among secondary care doctors in Bahrain-A cross sectional study. *Int J Med Res Health Sci* 4: 401.
70. Omar AS, Elmaraghi S, Mahmoud MSA, Khalil MA, Singh R, et al. (2015) Impact of leadership on ICU clinicians' burnout. *Intensive Care Med* 41: 2016-2017.
71. Mohammed SB, Ali Hassan B, Younis MS (2018) Job Satisfaction and Burnout among Iraqi Physicians: Insight from University Hospital Surveys. *Arab J Psychiatry* 29.
72. Al-Dubai SAR, Rampal KG (2010) Prevalence and Associated Factors of Burnout among Doctors in Yemen. *J Occup Health* 52: 58-65
73. Bany Hamdan A, Alshammary S, Javison S, Tamani J, AlHarbi M (2019) Burnout Among Healthcare Providers in a Comprehensive Cancer Center in Saudi Arabia. *Cureus* 11: e3987.
74. Maslach C, Jackson E, Leiter M. *Maslach Burnout Inventory*TM. Manual 4th.
75. Bianchi R, Truchot D, Laurent E, Brisson R, Schonfeld IS (2014) Is burnout solely job-related? A critical comment. *Scand J Psychol* 55: 357-361.

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