Quantifying Burnout among Emergency Medicine Professionals

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Abstract

Background: Burnout is a syndrome explained as serious emotional depletion with poor adaptation at work due to prolonged occupational stress. It has three principal components namely emotional exhaustion (EE), depersonalization (DP) and diminished feelings of personal accomplishment (PA). Thus, we aimed at measuring the degree of burnout in doctors and nurses working in emergency medicine department (EMD) of 4 select tertiary care teaching hospitals in South India. Methods: A cross-sectional survey was conducted among EMD professionals using a 30-item standardized pilot tested questionnaire as well as the Maslach burnout inventory. Univariate and Multivariate analyses were conducted using binary logistic regression models to identify predictors of burnout. Results: Total number of professionals interviewed were 105 of which 71.5% were women and 51.4% were doctors. Majority (78.1%) belonged to the age group 20-30 years. Prevalence of moderate to severe burnout in the 3 principal components EE, DP and PA were 64.8%, 71.4% and 73.3% respectively. After multivariate analysis, the risk factors [adjusted odds ratio (95% confidence intervals) for DP included facing more criticism [3.57(1.25,10.19)], disturbed sleep [6.44(1.45,28.49)] and being short tempered [3.14(1.09,9.09)]. While there were no statistically significant risk factors for EE, being affected by mortality [2.35(1.12,3.94)] and fear of medication errors [3.61(1.26, 10.37)] appeared to be significant predictors of PA. Conclusion: Degree of burnout among doctors and nurses is moderately high in all of the three principal components and some of the predictors identified were criticism, disturbed sleep, short tempered nature, fear of committing errors and witnessing death in EMD.

Keywords: Emergency medicine department, emergency medicine health-care professionals, exhaustion, burnout

Introduction

Emergency medicine (EM) is a new specialty in India and is still in the budding stage. In EM time is critical and the emergency physician (EP) should be trained in the assessment and management of emergencies which can vary from medical, surgical and trauma cases. Often referred to as a “young person’s specialty,” clinical EM attracts many physicians because of the high-intensity work environment, negotiable hours, working in a team and unpredictability of alternating critical cases with relatively minor ones which breaks the usual monotony of the working environment. Unlike in an outpatient department or in an inpatient hospital service, where the patients can be seen under much more controlled environment, EPs are expected to assess patients in a much more constricted time window and make decisions under pressure. Sometimes, they are also expected to take important decisions even with incomplete information as the patient may be unconscious. These issues make emergency services the busiest and the most stressful of the hospital services. This stress predisposes these health professionals to the “burnout syndrome” which is defined by the triad including emotional exhaustion (EE), depersonalization (DP), and low sense of personal achievement (PA). EE is evidenced by feelings of being emotionally overextended and exhausted by their work. DP is described as impersonal responses to patients and lack of feelings toward them while low sense of PA is suspected when they begin to realize the lack of competence or successful achievement in their work. Data regarding the burnout syndrome from India is scarce, and hence, we took this study with an aim to assess the prevalence of burnout among EM health-care professionals (HCPs) and to ascertain the risk factors for each of the three domains of burnout syndrome.
Methodology

It was a cross-sectional study done from April 2015 to March 2016 in four tertiary care hospitals from South India which were selected based on positive response from the management of these hospitals to a request to conduct the study in their premises. All hospitals were referral centers associated with a medical college. Two of them were from the city of Bengaluru, Karnataka and one each from the cities of Thrissur and Kannur from Kerala. As mentioned, prior permission from the dean of each of the institutions and the Heads of the EM Department (EMD) was obtained. Assuming an estimated prevalence of burnout among EMD HCPs to be around 43.3% based on previous studies,[7] the sample size calculated using an absolute precision of 10% and an alpha error of 5% was 95. Accounting for 10% nonresponders, the sample size was increased to 105.

All medical doctors and nurses both male and female who were employed in EMD were included in the study. Student nurses and doctors who were posted in EM as a part of their clinical posting rotations were excluded from the study. Written informed consent was obtained from all eligible professionals, and they were requested to answer a semi-structured pilot tested standardized questionnaire. The components of the questionnaire included sociodemographic details, Maslach Burnout Inventory (MBI) and risk factors for burnout. The MBI is a 22-item scale that measures all the three dimensions of burnout, namely, EE, DP, and PA. There are nine items in the EE subscale which assesses the feelings of being emotionally overextended and over-exhausted by one’s work. The five items in the DP subscale measure an unfeeling and impersonal response toward recipients of one’s service, care, treatment, or instruction. In both these, scales, a higher score is an indicator of burnout. Whereas it is vice versa for the physical activity (PA) subscale. There are 8 items in the PA subscale which assess the feelings of competence and successful achievement in one’s work with people.[8] The entire questionnaire is based on a Likert scoring pattern.

Data entry was done in Epi Info™ software version 7 (CDC, USA, 2011) and statistical analyses were performed with IBM’s Statistical Package for Social Sciences (SPSS) version 20 (IBM Corp., USA, 2011). Basic socio-demographic details were summarized using descriptive statistics and prevalence of burnout in each of the three domains was expressed in proportions and 95% confidence intervals (CI).

The risk factors were subjected to univariate analysis for each of the three domains and those with a significance of <0.2 were included in the multivariate analysis using binary logistic regression model. A $P < 0.05$ was taken as statistically significant. The study was approved by the ethics committee of our institution vide letter dated 09.04.2015 (IEC Study Reference Number: 147/2015).

Results

We interviewed a total of 105 EM HCP. The mean (standard deviation) age of the study population was 28.52 (5.43).

Approximately, 70% were women, three-fourths belonging to the age group between 20 and 30 years. Half of the study population comprised nurses and nearly two-third were married and an equal amount (68.6%) having experience in EM department for more than 1 year. The other demographic characteristics are summarized in Table 1.

The prevalence (percentage, 95% CI) of moderate to severe burnout in EE and DP were 64.8% (55.7%, 73.9%) and 71.4% (62.8%, 80%), respectively. The proportion of HCWs who perceived low to moderate PA was 73.3% (64.8%, 81.8%).

Risk factors for burnout such as feeling burdened with work, loss of enthusiasm, witnessing someone die, increased load of patients, being criticized, worried about infection risk, experiencing violence at workplace, disturbed sleep, fear of medication, short temper, smoking and alcohol use, and shift work system were subjected to univariate analysis for each of the domains and those with a $P < 0.2$ were subjected to binary logistic regression. Besides the above-mentioned risk factors, the demographic factors such as increasing age, female sex, and experience less than one year were also subjected to univariate analysis. These demographic variables, however, were not statistically significant to any of the three domains of burnout in univariate analysis and hence were not included in multivariate analysis. Similarly, smoking or alcohol use, shift work system and feeling patient care a burden and witnessing violence were not included in multivariate analyses as they were not statistically significant in any of the three domains. The results of the univariate analysis for the domain DP, EE, and PA are given in Tables 2-4, respectively. After multivariate analysis, the risk factors for DP domain included facing more criticism (aOR [95% CI] 2.83 [1.19, 6.73]) and having taken a break in the last 5 years (aOR [95% CI] 1.94 [1.01, 3.72]).
CI] = 3.57 [1.25, 10.19]), disturbed sleep (aOR [95% CI] = 6.44 [1.45, 28.49]) and being short tempered (aOR [95% CI] = 3.14 [1.09, 9.09]). While there were no statistically significant risk factors for domain EE, being affected by mortality (aOR [95% CI] = 2.35 [1.12, 3.94]) and fear of medication errors (aOR [95% CI] = 3.61 [1.26, 10.37]) appeared to be significant predictors of PA domain. These results are summarized in Table 5.

**DISCUSSION**

The prevalence of moderate to severe burnout reported in our study in 2 principal components EE and DP were 64.8% and 71.4% respectively which are in accordance to the findings of other previous studies done elsewhere in the world. However, the prevalence of low to moderate levels of perception on PA is quite high (73.3%) in our study when compared to the other studies. A postal survey conducted in Australia in 1999 among fellows and advanced trainees of an EM college using the MBI reported that 71.8% of respondents had moderate to high levels of EE, 69.9% had moderate to high levels of DP and 48.7% had moderate to low perception of personal accomplishment.[9] Another study reporting results from responses of 30 doctors working in EMD in Kingston City, Jamaica in 2014 using MBI showed that 70% of them reported moderate to high levels of EE, 73% reported low to moderate levels of PA, and 43% reported moderate to high levels of DP.[10] Another study from the neighboring country of China reported that among 205 EMD physicians responding the Chinese version of the MBI 52 (25.4%) of them came under the category of severe burnout.[11] Although there are not many studies directly assessing the prevalence of burnout in EMD health-care workers in India, a few relevant studies have been published in the recent past. One such study done among 603 nurses of 30 government hospitals in India using Copenhagen burnout inventory showed that 21% of them had psychological distress while 27.2% had personal (nonwork related) burnout, 14.7% had work-related burnout, and 9.4% suffered from patient related burnout.[12]

Burnout manifests as a growing dislike and general discontentment toward work which results in compromised patient care, substance abuse, and leaving the specialty.[5] It is not synonymous with “job stress,” “fatigue,” “alienation,” or “depression.” Burnout is more common than generally believed and may affect every aspect of the individual’s functioning, have a deleterious effect on interpersonal and family relationships and lead to a negative attitude toward life in general. There

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**Table 2: Risk factors for burnout in the depersonalization domain - univariate analysis**

|                    | Mod-severe (% of total) | Mild (% of total) | Total (% of n) | Univariate analysis |
|--------------------|-------------------------|-------------------|----------------|--------------------|
| DP                 |                         |                   |                |                    |
| Reduced enthusiasm |                         |                   |                |                    |
| No                 | 48 (70.6)               | 20 (29.4)         | 68 (64.8)      | 1.125 (0.460-2.749)| 0.796 |
| Yes                | 27 (73.0)               | 10 (27.0)         | 37 (35.2)      |                    |      |
| Affected by high mortality |                   |                   |                |                    |
| No                 | 48 (67.6)               | 23 (32.4)         | 71 (67.6)      | 1.848 (0.748-4.868)| 0.210 |
| Yes                | 27 (79.4)               | 7 (20.6)          | 34 (32.4)      |                    |      |
| Increased load of patients |                   |                   |                |                    |
| No                 | 13 (48.1)               | 14 (51.9)         | 27 (25.7)      | 4.173 (1.640-10.617)| 0.002 |
| Yes                | 62 (79.5)               | 16 (20.5)         | 78 (74.3)      |                    |      |
| More criticism     |                         |                   |                |                    |
| No                 | 23 (53.5)               | 20 (46.5)         | 43 (41)        | 4.522 (1.831-11.166)| 0.001 |
| Yes                | 52 (83.9)               | 10 (16.1)         | 58 (59)        |                    |      |
| Infection risk     |                         |                   |                |                    |
| No                 | 23 (76.7)               | 7 (23.3)          | 30 (29.6)      | 0.688 (0.259-1.830)| 0.452 |
| Yes                | 52 (69.3)               | 23 (30.7)         | 75 (70.4)      |                    |      |
| Disturbed sleep    |                         |                   |                |                    |
| No                 | 30 (90.9)               | 3 (9.1)           | 33 (68.6)      | 6.000 (1.670-21.561)| 0.002 |
| Yes                | 45 (62.5)               | 27 (37.5)         | 72 (31.4)      |                    |      |
| Fear of medication errors |                   |                   |                |                    |
| No                 | 39 (70.9)               | 16 (29.1)         | 55 (52.4)      | 1.055 (0.452-2.464)| 1.000 |
| Yes                | 36 (72.0)               | 14 (28.0)         | 50 (47.6)      |                    |      |
| Are there departmental activities aimed at bonding among staff? | | | | |
| No                 | 50 (82.0)               | 11 (18.0)         | 61 (58.1)      | 3.455 (1.427-8.364)| 0.006 |
| Yes                | 25 (56.8)               | 19 (43.2)         | 44 (41.9)      |                    |      |
| Short tempered     |                         |                   |                |                    |
| No                 | 20 (50.0)               | 20 (50.0)         | 40 (38.1)      | 5.500 (2.202-13.739)| <0.001 |
| Yes                | 55 (84.6)               | 10 (15.4)         | 65 (61.9)      |                    |      |

DP: Depersonalization, OR: Odds ratio, CI: Confidence interval
remains no doubt that the implications of work-related stress include the effects on worker satisfaction and productivity, their mental and physical health, absenteeism and its economic cost, the wider impact on family function and finally, the potential for employer liability.[13] Burnout not only affects the physician’s personal life and family ties but also has well-proven effects on the professional life. This may be associated with a lower capacity for empathy and suboptimal patient care. Prolonged fatigue has also been found to be negatively associated with the relationship quality between physicians and other EMD staff.[14]

Our study reported that there was no association between certain demographic characteristics such as age, sex, or marital status possibly because of a smaller sample size. There have been contrasting notions on how early or late in life burnout is more prevalent among EMD health professionals. A study by Kalemgolu and Keskin[14] concluded that manifestations of burnout usually appear in the fourth decade. On the contrary, the study by Peisah et al.[15] concluded that younger people are more susceptible to burnout and psychological distress.

Various studies have identified a large number of factors that are known to cause burnout in EMD physicians and nurses. Factors such as high patient load and limited workforce drains the energy of the working individual, and they are overworked leading to physical and mental fatigue.[16] Poor workforce also creates work-time pressure. This may include longer work shifts and shorter duration available to complete a given task. A hurried completion of task further results in fear of errors, medical negligence and a general non-satisfaction of the patient care given. An atmosphere of the EMD is usually charged with varied emotions and expressions from the patient, patient’s relatives, and the health-care team. Unpredictable patient load with hospital infrastructure and resources mismatch often leaves the health-care workers stressed to tackle the situation as the environment then becomes unsafe due to questioning attendees of a sick patient.[17] The EMD personnel also deal with deaths on a regular basis when compared to their colleagues in many other departments. They also are more commonly involved in breaking the bad news to a totally unexpecting patient relative and thereby understand and deal with the emotions of the patient’s relatives which are some non-medical aspects, not many doctors or nurses are formally trained with. Some other glaring drawbacks include deficiencies in teamwork and lack of professional support, deficient financial rewards, lack of personal time, litigation concerns, and lack of communication.[18]

Table 3: Risk factors for burn out in the emotional domain - univariate analysis

|                       | Mod-severe (% of total) | Mild (% of total) | Total (% of n) | OR (95% CI) | P     |
|-----------------------|-------------------------|-------------------|----------------|-------------|-------|
| Reduced enthusiasm    |                         |                   |                |             |       |
| No                    | 43 (63.2)               | 25 (36.8)         | 68 (64.8)      | 1.211 (0.519-2.824) | 0.657 |
| Yes                   | 25 (67.6)               | 12 (32.4)         | 37 (35.2)      |             |       |
| Affected by high mortality |                     |                   |                |             |       |
| No                    | 42 (59.2)               | 29 (40.8)         | 71 (67.6)      | 2.244 (0.892-5.648) | 0.082 |
| Yes                   | 26 (76.5)               | 8 (23.5)          | 34 (32.4)      |             |       |
| Increased load of patients |                     |                   |                |             |       |
| No                    | 12 (44.4)               | 15 (55.6)         | 27 (25.7)      | 3.182 (1.287-7.867) | 0.010 |
| Yes                   | 56 (71.58)              | 22 (28.2)         | 78 (74.3)      |             |       |
| More criticism        |                         |                   |                |             |       |
| No                    | 24 (55.8)               | 19 (44.2)         | 43 (41)        | 1.935 (0.857-4.369) | 0.110 |
| Yes                   | 44 (71.0)               | 18 (29.0)         | 62 (59)        |             |       |
| Infection risk        |                         |                   |                |             |       |
| No                    | 23 (66.7)               | 7 (33.3)          | 30 (29.6)      | 0.889 (0.364-2.172) | 0.796 |
| Yes                   | 48 (64.0)               | 27 (36.0)         | 75 (70.4)      |             |       |
| Disturbed sleep       |                         |                   |                |             |       |
| No                    | 43 (59.7)               | 29 (40.3)         | 72 (68.6)      | 2.108 (0.836-5.315) | 0.128 |
| Yes                   | 25 (75.8)               | 8 (24.2)          | 33 (31.4)      |             |       |
| Fear of medication errors |                     |                   |                |             |       |
| No                    | 32 (58.2)               | 23 (41.8)         | 55 (52.4)      | 1.848 (0.816-4.186) | 0.157 |
| Yes                   | 36 (72.0)               | 14 (28.0)         | 50 (47.6)      |             |       |
| Are there departmental activities aimed at bonding among staff? |                     |                   |                |             |       |
| No                    | 45 (73.8)               | 16 (26.2)         | 61 (58.1)      | 2.568 (1.129-5.841) | 0.025 |
| Yes                   | 23 (52.3)               | 21 (47.7)         | 44 (41.9)      |             |       |
| Short tempered        |                         |                   |                |             |       |
| No                    | 20 (50.0)               | 20 (50.0)         | 40 (38.1)      | 2.824 (1.230-6.480) | 0.013 |
| Yes                   | 48 (73.8)               | 17 (26.2)         | 65 (61.9)      |             |       |

EE: Emotional exhaustion, OR: Odds ratio, CI: Confidence interval
Table 4: Risk factors for perception of low-moderate level of personal achievement - univariate analysis

| Variable                              | Mild-moderate (% of total) | High (% of total) | Total (% of n) | Univariate analysis |
|---------------------------------------|-----------------------------|-------------------|----------------|---------------------|
|                                       | OR (95% CI)                 | P                 |                |                     |
| Reduced enthusiasm                    |                             |                   |                |                     |
| No                                    | 45 (66.2)                   | 23 (33.8)         | 68 (64.8)      | 3.271 (1.124-9.518) | 0.036               |
| Yes                                   | 32 (86.5)                   | 5 (13.5)          | 37 (35.2)      |                     |                     |
| Affected by high mortality            |                             |                   |                |                     |
| No                                    | 56 (78.9)                   | 15 (40.8)         | 71 (67.6)      | 0.433 (0.177-1.060) | 0.064               |
| Yes                                   | 21 (61.8)                   | 13 (38.2)         | 34 (33.4)      |                     |                     |
| Increased load of patients            |                             |                   |                |                     |
| No                                    | 20 (74.1)                   | 7 (25.9)          | 27 (25.7)      | 0.950 (0.351-2.571) | 0.920               |
| Yes                                   | 57 (73.1)                   | 21 (26.9)         | 78 (74.3)      |                     |                     |
| More criticism                        |                             |                   |                |                     |
| No                                    | 32 (74.4)                   | 11 (25.6)         | 43 (41)        | 0.910 (0.376-2.201) | 0.834               |
| Yes                                   | 45 (72.6)                   | 17 (27.4)         | 62 (59)        |                     |                     |
| Infection risk                        |                             |                   |                |                     |
| No                                    | 18 (60)                     | 12 (21.3)         | 30 (29.6)      | 2.458 (0.984-6.143) | 0.051               |
| Yes                                   | 59 (78.7)                   | 16 (21.3)         | 75 (70.4)      |                     |                     |
| Disturbed sleep                       |                             |                   |                |                     |
| No                                    | 53 (73.6)                   | 19 (26.4)         | 72 (68.6)      | 0.956 (0.378-2.419) | 1.000               |
| Yes                                   | 24 (72.7)                   | 9 (27.3)          | 33 (31.4)      |                     |                     |
| Fear of medication errors             |                             |                   |                |                     |
| No                                    | 34 (61.8)                   | 21 (38.2)         | 55 (52.4)      | 3.794 (1.443-9.973) | 0.008               |
| Yes                                   | 43 (86.0)                   | 7 (14.0)          | 50 (47.6)      |                     |                     |
| Are there departmental activities     |                             |                   |                |                     |
| aimed at bonding among staff?         |                             |                   |                |                     |
| No                                    | 43 (70.5)                   | 18 (29.5)         | 61 (58.1)      | 0.703 (0.287-1.718) | 0.439               |
| Yes                                   | 34 (77.3)                   | 10 (22.7)         | 44 (41.9)      |                     |                     |
| Short tempered                        |                             |                   |                |                     |
| No                                    | 27 (67.5)                   | 13 (32.5)         | 40 (38.1)      | 1.605 (0.667-3.861) | 0.289               |
| Yes                                   | 50 (76.9)                   | 15 (23.1)         | 65 (61.9)      |                     |                     |

PA: Personal achievement, OR: Odds ratio, CI: Confidence interval

The MBI addresses some of these factors. In the depersonalization domain, the risk factors for burnout that came significant in univariate analysis include increased patient load, facing more negative criticisms, disturbed sleep, being short tempered and a perception that the department does not conduct adequate team building or bonding activities among the departmental staff members [Table 2]. However, after multivariate analysis, facing more criticisms, being short tempered, and having disturbed sleep continued to remain significant predictors. Based on our findings, disturbed sleep increases the odds of burnout in the depersonalization domain by more than 6 times, while facing criticisms and being short tempered increases it by more than 3 times. In the EE domain, though in the univariate analysis, we found...
a patient load, being affected by death, criticisms, disturbed sleep, short-tempered nature, perception inadequate bonding activities and fear of medication errors as significant predictors, none of them remained statistically significant when subjected to multivariate analysis. In the PA domain, a feeling of low or moderate level achievement was associated with decreased enthusiasm to work, high patient load, fear of risk of infections and fear of medication errors in the univariate analysis. However, when a regression analysis was performed, fear of medication errors increased the odds of perception of low or moderate PA by 3 times while witnessing death increases it by 2 times.

We believe that many more factors as depicted by the other studies would be associated with various domains of burnout in our setting as well, but these have not reached statistical significance probably due to a small sample size. Furthermore, we were unable to recruit participants belonging to corporate and other non-teaching hospitals which form a significant part of the health-care sector in India as we were unable to obtain permission from the respective hospital administrations. Third, we were unable to include EM technicians and paramedics who are an integral part of the EM team and have been included in multiple studies abroad. The reason for this being that formal training and designations for these posts are not yet in place in India.

**Conclusion**

The prevalence of burnout in our study is notably high in all the 3 domains, namely, DP, EE, and a sense of PA. We believe that knowledge about burnout in emergency health professionals is essential and would tailor the way the department frames its human resource policies. It would also prove to be effective in designing interventions that would help prevent burnout. EM is a relatively new field in India, and it is important for us to realize the unique problems which the professionals face to keep the field growing and expanding instead of collapsing under the pressures of preventable issues like burnout. It is also important that the quality of care given to the patients in the EMD is of very high standards as many patients come in life-threatening but curable illnesses. A good standard is possible only with a happy and healthy workforce. We further recommend that much larger studies are taken up in this field in India to document the prevailing situation in an EMD health-care setup and advise individual institutions to undertake periodic audits of the current local work environment in EMD and stress levels among EMD professional and bring about policy changes within the institution to tide over the issues identified.

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**Conflicts of interest**

There are no conflicts of interest.

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