Comparison of stress and burnout among anesthesia and surgical residents in a tertiary care teaching hospital in North India

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ABSTRACT

Objective: The residents undergoing training at hospitals in our country face challenges in terms of infrastructure and high workload with undefined working hours. The aim of the study was to compare the stress and burnout levels in trainee doctors doing residency in surgical fields and anesthesia at a tertiary care academic center in North India. Materials and Methods: A comparative, observational study was conducted in a tertiary care teaching hospital in North India. After Ethics Committee approval, 200 residents (100 each from surgical branches and anesthesia) were required to fill a questionnaire with information about age, sex, year of residency, marital status, and the Perceived Stress Scale-10, and Burnout Clinical Subtype Questionnaire-12. Burnout and perceived stress were compared between residents of anesthesia and surgical specialties. Results: Residents of both surgical and anesthesia branches scored high in perceived stress, namely 21 and 18, respectively. The score was significantly higher in surgical residents ($P = 0.03$) and increased progressively with the year of residency. The majority of residents (90% surgical, 80% anesthesia) felt that they were being overloaded with work. However, only 20%–30% of respondents felt that there was lack of development of individual skills and still fewer (<10%) reported giving up in view of difficulties. Conclusion: There is high level of stress and overload dimension of burnout among the residents of anesthesia and surgical branches at our tertiary care academic institution and the surgical residents score marginally higher than anesthesia residents.

KEY WORDS: Professional burnout, psychological stress, tertiary care centers

Introduction

Postgraduate trainees and registrars working in a tertiary care teaching hospital experience stress in day-to-day life in view of heavy workload, long duty hours, night shift, little vacation time, inadequate time to sleep, eat, and study and this is compounded by the expectations of teachers, parents, and patients which are higher in a tertiary care institute. The residents undergoing training in developing countries also suffer due to poor infrastructure, far more patient–doctor ratio and no defined limit of a number of working hours. Certain level of stress may be considered desirable for training and improved performance, but the continuous chronic stress may predispose these young doctors to burnout syndrome which is detrimental for the residents themselves and also for the greater patient population they treat. As per literature, the minimal margin of error, and fatal complications in surgical patients add to the mental fatigue of residents working in anesthesia and surgical branches.

Various studies have been published emphasizing the high stress and burnout in doctors doing residency in anesthesia or surgical branches, but much of the literature is from the developed nations. The awareness and recognition of this fact are less in developing world and there is paucity of literature.
on stress and burnout among anesthesia and surgery residents in developing countries. The residents get selected into various specialties after a highly competitive entrance examination and during 3 years of residency, the young doctors are supposed to be perfect, meeting expectations of the parents, teachers, patients, and institute. We planned this study to compare the stress and burnout between residents of anesthesia and surgical fields working in our tertiary care institute in North India. The primary aim was to study the level of stress and burnout among anesthesia and surgical residents and secondary aim was to compare the level of stress and burnout among the residents of anesthesia and surgical branches.

**Materials and Methods**

After Institutional Ethics Committee approval (NK/1086/Study/3685), a total of two hundred residents comprising 100 residents (Group A) from the department of anesthesia and another 100 residents (Group S) from various surgical branches including general surgery, otorhinolaryngology, orthopedics, obstetrics, and gynecology were enrolled. The study was done over a period of 3 months, that is, from February 2015 to April 2015. The resident doctors were informed about the anonymous character of the study and participation was purely on voluntary basis. All the 200 residents participated with their will and no resident refused to fill the questionnaire. Since the doctors were required to fill the questionnaires themselves, consent to fill the questionnaire was considered as consent to be included as individual in the study. The questionnaire included information about age, sex, marital status, whether having children or not and the individual and year of residency along with ten questions of Perceived Stress Scale-10 (PSS-10) and 12 questions of Burnout Clinical Subtype Questionnaire (BCSQ-12).

PSS-10 includes ten questions and allows assessment of perceived stress of an individual. All questions are from 0 (never) to 4 (very often). PSS scores are obtained by reversing responses (0 = 4, 1 = 3, 2 = 2, 3 = 1, 4 = 0) to the four positively stated items (items 4, 5, 7 and 8) and then, summing across all scale items. For PSS-10, a score of 13 is considered average and a score of 20 or higher is considered high level of stress requiring lifestyle modification and learning stress reduction techniques.[6]

BCSQ-12 is a series of statements indicating experiences which occur at work. It has three dimensions – the “overload” dimension is made up of items 1, 4, 7, and 10. The “lack of development” dimension is made up of items 2, 5, 8, and 11 and the “neglect” dimension is made up of items 3, 6, 9, and 12. The residents were supposed to answer all 12 questions and indicate their agreement level with each of the statement as per the Likert scale with seven options from 1 (totally disagree) to 7 (totally agree).[7]

**Statistical analysis**

The statistical analysis was performed using Statistical Package for Social Sciences (SPSS Inc., Chicago, IL, version 18.0 for windows, USA). The normally distributed data were compared with independent two-sample t-test, whereas the skewed data were compared by Mann–Whitney U-test. Qualitative or categorical variables (gender, year of residency, and marital status) were compared using Chi-square or Fisher’s exact test as appropriate. All statistical tests were two-sided and were performed at a significance level of $P < 0.05$.

**Results**

We approached 100 residents, each from the field of anesthesia and various surgical branches and they consented to fill the questionnaire anonymously. The demographic parameters such as age, sex, marital status, and the year of residency were comparable among the residents of anesthesia and surgical branches [Table 1].

The median value of PSS-10 was 21 in residents of surgical branches and 18 in those doing residency in anesthesia and this difference was statistically significant ($P = 0.03$) [Figure 1]. Doctors doing 1st year of residency in surgical branches had a median PSS of 19 compared to 16.5 in 1st year anesthesia residents. Second year residents in surgical branches and anesthesia had a median PSS of 21.5 and 20, respectively. Final year residents in surgical branches had a median PSS of 21 as compared to 19 in final year anesthesia residents [Figure 1]. There was no difference in the PSS score in the male and female residents in surgical specialties as well as anesthesia [Figure 1].

For “the overload dimension” of burnout as per BCSQ-12 score, 86% of surgical residents and 62% of anesthesia residents felt that the time they invest in their work was more than what they should in their health. Sixty-eight percent surgical residents and 54% anesthesia residents agreed that they neglect their personal lives when pursuing important achievements in work. About 66% surgical residents and 60% anesthesia residents agreed that
they risk their own health while pursuing good results at work. Seventy-four percent of surgical residents and 58% of anesthesia residents also felt that they overlooked their personal needs to fulfill work demands [Table 2].

In “the lack of development” domain, only 15% of surgical residents and 18% of anesthesia residents would have liked to do another job, one which is more challenging to their abilities. About 18% each of surgical as well as anesthesia residents recognized that their professional work is actually an obstacle to development of their abilities. Twenty-one percent residents in surgical branches and 23% in anesthesia felt they would like to do another job where they can better develop their talents. When 57% of residents in surgical branches felt that their work does not offer them opportunities to develop their abilities, only 26% of anesthesia residents felt the same [Table 2].

In “the neglect” dimension, 88% of surgical residents and 92% of anesthesia residents agreed that they do not stop trying even when things do not turn out as well as they should at work. Ninety-four percent surgical residents and 90% anesthesia residents also felt that they do not give up in response to difficulties in work. Only 2% surgical residents and 4% anesthesia residents felt that they give up in the face of difficulties they face in their work tasks. However, 33% surgical residents and 39% anesthesia residents realize that when the effort they invest in work is not enough, they give in Table 2.

Discussion

The results of our study show high level of stress as perceived by the residents in anesthesia as well as surgical specialties. The stress levels show an increasing trend with each year of residency. The level of stress is also higher in residents in surgical specialties than anesthesia residents. A probable reason could be that the anesthetic residents are relieved of their clinical duties for 24 h after a 12 h night duty, whereas surgical residents are not. Furthermore, during routine clinical hours in the department, the anesthesia residents are duly relieved for meals by their senior colleagues while at work whereas the surgical residents have to find the time for meals on their own in between their busy clinical schedule. However, even anesthesia residents have high-stress level, and this could possibly be due to the minimal safety margin in anesthesia and continuous vigilant monitoring of patients in operating rooms which leads to mental fatigue. High psychological stress in young individuals may lead to high blood pressure, higher body mass index, large waist to hip ratio, higher cortisol levels, suppressed immune function, decreased sleep, and increased alcohol consumption. Therefore, the high PSS score in our study indicates the need for intervention to reduce the stress level in these young trainees through lifestyle modification and by offering social support to the residents.

Burnout is a progressively developing syndrome that arises as a result of ineffective coping strategies adopted by people to protect themselves from the work-related stress. According to BCSQ-12, burnout can manifest in three dimensions. The overload dimension refers to neglecting one’s own life and risking one’s health while trying to achieve good results in his/her profession. As per the result of our study, the surgical residents score higher in this dimension of burnout as compared to anesthesia residents, though the difference is marginal. More than 70% of surgical residents and about 60% of anesthesia residents felt that their health and personal needs are ignored and they felt the need to invest more time on their health as well as personal life.

The lack of development dimension refers to desire to take up other jobs as they feel they can develop their skills better in any other job, along with the absence of growth experience in the individual. While <20% of residents in anesthesia and surgical specialties felt the need to change their field of work, about 30% did feel that their work does not give them enough opportunities for developing their own skills. This was more frequently seen in the residents in surgical branches, the probable reason being the slow learning curve in surgery as

Table 2: Agreement with the statements of Burnout Clinical Subtype Questionnaire-12

| Dimension of burnout | Group S (n=100) | Group A (n=100) | P |
|----------------------|----------------|----------------|---|
| **Overload**         |                |                |   |
| 1. I think the dedication I invest in my work is more than what I should for my health | 86 | 62 | 0.0001 |
| 4. I neglect my personal life when I pursue important achievements in my work | 68 | 51 | 0.014 |
| 7. I risk my health when I pursue good results in my work | 66 | 60 | 0.379 |
| 10. I overlook my own needs to fulfill work demands | 74 | 58 | 0.016 |
| **Lack of development** |                |                |   |
| 2. I would like to be doing another job that is more challenging for my abilities | 15 | 18 | 0.567 |
| 5. I feel that my work is an obstacle to the development of my abilities | 18 | 18 | 1.000 |
| 8. I would like to be doing another job where I can better develop my talents | 21 | 23 | 0.732 |
| 11. My work does not offer me opportunities to develop my abilities | 37 | 26 | 0.094 |
| **Neglect**          |                |                |   |
| 3. When things at work do not turn out as well as they should, I stop trying | 12 | 8 | 0.345 |
| 6. I give up in response to difficulties in my work | 6 | 10 | 0.297 |
| 9. I give up in the face of any difficulties in my work tasks | 2 | 4 | 0.407 |
| 12. When the effort I invest in work is not enough, I give in | 33 | 39 | 0.376 |

Values are numbers of residents or percentage, Group S: Surgical residents, Group A: Anesthesia residents
Both methods do not assess overburden at work and lack of poor facilities of hostel along cities mentioned the major factors for stress in junior residents. Previous data from our country from two major metropolitan residency. such programs and counseling during the stressful period of the residents have not reached a point where they choose neglect as a response to difficulties they encounter. Our results are similar to those of Montero-Marín et al. who explain the low level of neglect component of burnout in trainees to be due to the nature of their work and less exposure to stringent rules of the institute they work in. Minimal exposure to inflexible organizational rules of institute, make the trainees less prone to exhaustion due to these pressures. This finding suggests that the young trainees are highly motivated. Despite the stress and burnout they experience, they are determined to pursue their goal. We want to emphasize the need for developing institutional protocols to support the residents in all aspects and not let their stress and burnout progress to severe depression later in their career. The role of thesis guide is of utmost importance for one to one interaction with the resident as is the role of institute to conduct wellness programs for residents. Various sports, meditation, counseling sessions on weekends with active participation of residents will probably be helpful.

In a review focusing on stress and burnout in anesthesia, Nyssen and Hansez reported the increasing incidence of stress and burnout in anesthesia with much more common than actual stress. Balch and Shanafelt suggested that high dedication of surgeons to their profession makes them more prone to burnout. Not realizing the increasing agony of surgeons will simply put their health, life, and those of patients they treat at risk. Thus, they highlighted the need to recognize the stress and burnout as well as implementing strategies to help them. Hochberg et al. emphasized that along with the recognition of stress and burnout in surgical residents, it was also important to recognize the signs of depression, substance abuse, and difficulties in personal relationships, all of which could potentially lead to suicidal tendencies in both residents and faculty in surgical branches.

However, in a randomized controlled trial by Saadat et al., a group of anesthesia residents was assigned to be a part of wellness program where they were taught how to cope up with work and family-related stress. This group later reported fewer stresses in their role as a parent, experienced less anxiety, and better coping ability to overall environment. They highlighted the importance of offering support to residents in the form of such programs and counseling during the stressful period of residency.

Previous data from our country from two major metropolitan cities mentioned the major factors for stress in junior residents. Inadequate time to study due to extra duties, overburden at work and lack of poor facilities of hostel along with the absence of regular physical exercise were perceived as major stressors. However, in one of these studies, authors used depression anxiety stress scale and in other, authors developed their own questionnaire. Both methods do not assess stress and burnout in an objective manner. We used PSS-10 and BCSQ-12 in our study as they give relevant information of stress and burnout subtype, even at trainee level. PSS was developed by Cohen et al. in 1983. This scale assesses individual’s perceived stress over the past 1 month. Among the scales available to assess burnout of an individual, Maslach Burnout Inventory-General Survey (MBI-GS) is widely used. However, BCSQ-12 has been shown to be superior to MBI-GS in characterizing work-related discomfort experienced as it provides a solid definition of burnout syndrome at structural level.

One of the limitations of our study is that we did not evaluate the possible predictive factors leading to stress and burnout in our residents. A detailed study to delineate the various causes of these high levels of stress and burnout may be planned in future to take effective measures. The number of residents who reported giving up in face of difficulties could be underestimation because in this data, all residents who have already left residency in between before the study were not included. Another limitation could be that we did not study the detrimental health hazards of stress and burnout among the resident doctors. However, the primary objective of this study was to explore whether stress is a significant problem among trainee doctors in developing countries and we found significant information regarding the persisting stress and burnout level among the residents in anesthesia and surgical specialties. Although it is a single institution experience, our institute being a tertiary care center, the findings may be extrapolated to all busy academic institutes in developing countries. The working hours, relieving of residents after 24 h duty and relieving for meals vary from institution to institution, and question the generalizability of results of study. Furthermore, the study explored the stress and burnout in among anesthesia and surgical specialty residents only. The similar measurement should be done across resident of all medical specialties.

Conclusion

We conclude that there is high level of stress and overload dimension of burnout among the residents of anesthesia and surgical branches at our tertiary care academic institution and the surgical residents score marginally higher in stress scale and all dimensions of burnout than residents in anesthesia. The applicability of the study would be in establishing institutional policies and training programs toward the betterment of vulnerable young doctors who are taking care of human lives despite experiencing stress and burnout.

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Conflicts of interest
There are no conflicts of interest.
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