

Assessment of Occupational Stress in Some Medical and Surgical Specialties

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Background: In recent decades, attention was given increasingly to stress, especially to its secondary effects. Models were developed in response to stress to facilitate understanding of the pathology induced by stress. At the same time, methods to analyze the stress level by laboratory measurements or by means of questionnaires were favored.

Aim: To assess the incidence and the degree of the burn-out level in medics of different specialties.

Material and method: We ran a survey using a questionnaire to measure the level of burnout to the study group. We looked for correlations with coexisting factors, such as: age, addictions, time spent at work, on call time. Data were processed by Graph Pad Prism 5.

Results: The response rate was acceptable: 70 out of 80. We found a dominating medium degree of damage for the intensivists on poll position being the overall burnout. For the internists, there is no correlation between levels of training and fatigue factors, while the professional exhaustion is merely medium to low. The surgeons cope quite well, professional exhaustion being medium, significantly correlated with smoking. Couples face worse depersonalization when it comes to surgeons ($p < 0.0048$).

Conclusions: The occupational stress assessed by the Maslach questionnaire seems to be moderate to both anaesthetists and surgeons in the Tg. Mureș county hospital.

Keywords: occupational stress, emotional exhaustion, depersonalization, reduced professional achievements, burnout

Introduction

The use of guidelines, protocols, audits, regulations, and inspections leads to reductions in medical autonomy and brings medicine under managerial and cost control by governments and many other factors. Control exertion over work is important for the job satisfaction of clinicians but sometimes leads to health impairment. The changes in relationships with patients and society are particularly important. There has been a perceived loss of trust, coinciding with a feeling that the media has become much more hostile, the amount of negative news stories being though fairly constant. At the same time, patients demand and have been encouraged to expect enhanced services, including extended hours, rapid access and sometimes have unrealistic expectations about the power of medicine to solve the diseases of modern life [1, 2]. Being inherent in medical career job, stress leads to poor performance at work, to poor quality of care, affects career longevity and negatively impacts on the health of the individual. Jennifer and colleagues showed that dissatisfied physicians were much more likely to report difficulties in caring for patients, in continuing the good doctor-patient relationship, in spending adequate time with patients, and in providing quality care in teaching hospitals of Karachi, while in England, the most significant factor of stress for women was the stress of the job interfering with family life [3].

Due to changes in socio-demographic conditions (age, sex, education, marital status, individual income, consumption of drugs, lifestyle, etc.) the similar challenges

may determine different functional characteristics, or fatigue in varying degrees. The boundary between normal and abnormal can not be fixed, moving easily from one side to the other [4]. The source of stressor stimuli most often comes from the surrounding environment but frequently is the result of own affective - sensory processes or induced by others. Sometimes these processes are reactivated by memory. Healthy individuals can control these reactions to stimuli by mastering their instincts as well as through education, but frequent mental stress and persistent psychical shocks, professional and / or other (physical, financial, dissatisfaction, failure, overwhelming positive emotions, lack of opportunities, fatigue), may in time lead to the increase of affective disorders, even psychical disorders [5].

Multiple researches showed that prolonged exposure to stress can lead to disease in some individuals. In response to environmental stress, an increased number of physiological processes alter, including the production of so-called stress hormones. Thus the activity of hypothalamic-pituitary-adrenal axis plays a major role to the adaptability process. For this reason, corticotropin-releasing hormone - CRH, adrenocorticotropin - ACTH, catecholamines and corticosteroids play a major role in the development of stress related conditions. The increase of cortisol is associated with most symptoms of these diseases [6].

In ICU stressful stimuli can lead to the burnout syndrome, considered a type of professional stress as a result of social interaction between people who need help and those who provide it (7, 8). It may be manifested by various

Table I. Levels of professional exhaustion according to Maslach [12]

Condition	Low	Medium	High
Emotional exhaustion	9–18	19–27	28–45
Depersonalization	6–12	13–18	19–30
Reduced personal achievements	10–20	21–30	31–50
Total score	25–50	51–75	76–125

symptoms, both somatic and psychological, being characterized by high levels of emotional exhaustion and depersonalization, but also low personal achievements, so that it can affect the quality of patients' care. Long work hours, overnight call duties, rotating shifts are characteristics of hospital medical practice and contribute to disruption and restriction of physicians' sleep. The impact of sleep loss and the global response to sleep loss are significantly different between individuals. There are even intraindividual variations in neurobehavioral functions. Chronic sleep deprivation and extended work schedule can lead to increased, even worsening of symptoms, to evidenced neurobehavioral impairments, such as loss of vigilance and of the cognitive performance, to potential negative impact on the well-being of doctors and their patients, thus disturbing human relations [2,7,8].

The appearance of emotional exhaustion is indicated by the decreased level of involvement, increased tensions in the line of duty, reluctance to novelties and loss of flexibility. Typically, physical and mental fatigue, depression, cynicism, negative emotions, inability to concentrate, anxiety, insomnia, apathy, irritability, sometimes addictions (alcohol, tobacco or drugs) are associated with such developments [9,10]. Many authors have noted the appearance of a greater number of signs of burnout in individuals having problems in interpersonal relationships, with colleagues and collaborators, failure to face team work, often based on the inequity in the activity [11].

Materials and methods

This study is a survey. We used a questionnaire to measure the levels of burnout in the profession of man-man type, built on Maslach and Jackson theory [12]. The questionnaire contains 25 items, nine of which measure emotional exhaustion, 6 for the degree of depersonalization and 10 for the reduced personal achievements. As a way of response we used a Likert scale in five steps, as following: 1 – very rare, 2 – rarely, 3 – sometimes, 4 – frequently, 5 – very often. The advantage of this scale is the possibility

Table III. Number of calls/month by specialty

No. of calls/month	Anesthetists	Surgeons	Internists
0	2	2	2
2	1	3	0
3	1	9	8
4	12	8	2
5	5	2	2
> 6	5	2	0
> 10	2	0	0

Table II. Age distribution in the investigated for burnout group

Age	ICU	Surgeons	Medical departments
21–30 years	12	4	6
31–40 years	8	12	5
41–50 years	5	6	1
51–60 years	3	4	1
> 60 years	0	1	2
Total	28	27	15

of a greater variety of responses and reduced risk of getting identical answers from subjects. Intercalary items were reverse scored to counter possible effects of monotony and to maintain consistency of responses. The levels of professional exhaustion we used were retrieved from and cited as belonging to Maslach [2,9,11,12].

The distribution according to the condition allows for the determination of total and partial scores. The scores are subject to interpretation either individually or correlated in between.

These questionnaires were distributed to physicians of medical and surgical profile. Anonymity was granted. Another questionnaire on personal data (age, sex, marital status, existence of addictions like coffee, alcohol, tobacco, drugs, history and co-morbidities, the monthly number of hours spent on call, the degree of difficulty of their work, leisure, relationships with colleagues) accompanied the first one. The study groups consisted of 28 anesthesiologists / intensivists and emergency physicians (residents, specialists, seniors; 27 general surgeons and urologists; 15 doctors in the medical field departments (cardiology, gastroenterology endocrinology, radiology).

Results

The response rate was 28 out of 30 for the anesthesiologists, 27 out of 30 surgeons responded and 15 out of 20 internists.

The responders were dominantly women for the anesthesiologists – 18, 10 for the internists and only 5 for the surgeons, mirroring in fact the sex distribution of their profession.

Responses from the questionnaire were correlated with general data of the respondents in order to identify a possible link between the degree of burnout and individual factors, occupation and workplace. In table number II we inserted the distribution of age of the doctors interviewed.

We noticed that internists and surgeons performed an average of 3–4 calls/month while ICU (Intensive Care Unit) doctors performed more than 4; if they were residents, even more, but responsibility belonged to senior and specialist doctors who are accountable for the residents' deeds (Table III).

The level of professional exhaustion for ICU physicians was inserted in table number IV.

The medium degree of damage dominates, mainly when assessing the overall burnout – 18 individuals out of 28, followed by emotional exhaustion – 14 of 28, and

Table IV. Level of professional exhaustion in ICU physicians

	Emotional exhaustion			Depersonalization			Reduced achievements			Burnout		
	Low	Medium	High	Low	Medium	High	Low	Medium	High	Low	Medium	High
Women	3	12	3	10	8	0	6	11	1	6	11	1
Men	6	2	2	6	4	0	3	6	1	3	7	0

decrease of professional achievements – 17 of 28. Although there were five reported cases of great exhaustion, 3 cases of depersonalization, and 9 cases of reduced professional achievements, only 1 person of those had a high degree of burnout.

When correlating life-style to the three levels of professional exhaustion, we found: statistically significant correlations between coffee consumption and depersonalization, emotional exhaustion and smoking, as well as between professional seniority and lower professional results. (Tables V, VI, VII).

The same statistical tests were run on specialists in internal medicine

Statistical analysis reveals no correlation between levels of training and studied fatigue factors. Also in the case of medical profile, the changes at different levels were generally of medium and low degree.

As for the surgeons, the overall level of professional exhaustion seems to be quite low, as depicted in table number IX.

Still, we found significant correlations between the level of depersonalization and the marital status ($p < 0.0048$), but also when it comes for burnout and smoking ($p < 0.0316$).

Discussions

Given the low number of respondents, and different degrees of approach to the questionnaires by the colleagues aimed, we can not consider our results as being the ultimate model of occupational stress still the fact that an-

esthesiologists who are concomitantly involved with critical care, seem to be aware of the burden they face daily, to a dominantly moderate degree. Coffee addiction and smoking are significantly correlated with occupational fatigue irrespective of the specialty, while when considering the surgeons, the marital status plays an important role in depersonalization. Couples seem to overcome easier the professional challenges. On the other hand, as professional orientation alters to some degree the response to environmental factors, one has to be cautious when considering the level of professional exhaustion as to each specialty.

Conclusions

1. The occupational stress assessed by the Maslach questionnaire, seems to be moderate to both anaesthetists and surgeons in the Tg. Mures county hospital
2. Coffee and smoking are significantly correlated with occupational fatigue, irrespective of the medical orientation
3. Our results bear the limits derived from the fact that the assessment of working conditions and of their impact on individuals was based on a subjective questionnaire prone to over or undervaluation.

Numerous studies have emphasized on the relationships between job characteristics and risk factors involved in the occurrence of diseases with varying severity, but also some behavioral or moods changes or addiction, but there is no total consensus on this matter.

Table V. Coffee consumption and depersonalization

	Coffee
Number of XY Pairs	27
Pearson r	-0.4034
95% confidence interval	-0.6794 to -0.02755
P value (two-tailed)	0.0369
P value summary	*
Is the correlation significant? (alpha = 0.05)	Yes
R square	0.1628

Table VII. Years in specialty and reduced professional achievements

	Coffee
Number of XY Pairs	27
Pearson r	-0.4022
95% confidence interval	-0.6785 to -0.02606
P value (two-tailed)	0.0376
P value summary	*
Is the correlation significant? (alpha = 0.05)	Yes
R square	0.1617

Table VI. Smoking and emotional exhaustion

	Smoking
Number of XY Pairs	27
Pearson r	-0.3935
95% confidence interval	-0.6730 to -0.01581
P value (two-tailed)	0.0423
P value summary	*
Is the correlation significant? (alpha = 0.05)	Yes
R square	0.1549

Table X. Smoking and occupational fatigue in surgeons

	Smoking
Number of XY Pairs	27
Pearson r	-0.4144
95% confidence interval	-0.04067 to -0.6864
P value (two-tailed)	0.0316
P value summary	*
Is the correlation significant? (alpha = 0.05)	Yes
R square	0.1717

Table VIII. Level of professional exhaustion in internal medicine specialists

	Emotional exhaustion			Depersonalization			Reduced achievements			Burnout		
	Low	Medium	High	Low	Medium	High	Low	Medium	High	Low	Medium	High
Women	3	5	2	6	3	1	5	4	1	3	7	0
Men	3	0	2	2	3	0	1	3	1	3	1	1

Table IX. Level of professional exhaustion in surgeons

	Emotional exhaustion			Depersonalization			Reduced achievements			Burnout		
	Low	Medium	High	Low	Medium	High	Low	Medium	High	Low	Medium	High
Women	2	3	0	4	1	0	1	4	0	3	2	0
Men	15	5	2	18	4	0	13	8	1	15	6	1

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