

Job burnout in 159 anesthesiology trainees

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ABSTRACT

Background: Anesthesiology may be stressful and most anesthesiologists develop mechanisms for coping. However, inexperienced trainee anesthesiologists seem to be vulnerable. We studied stress perception and job burnout in trainee anesthesiologists. **Methods:** Responses to perceived stress scale (PSS) and Maslach Burnout Inventory (MBI) were evaluated in 159 trainee anesthesiologists. **Results:** In our results, when perceived stress was increased, emotional exhaustion and depersonalization increased but personal accomplishment decreased, as expected. Perceived stress was very high in the early years of training. There was a negative correlation between age and emotional exhaustion and depersonalization, but positive correlation with personal accomplishment. Female anesthesiologists had higher personal accomplishment, but lower depersonalization points than male anesthesiologists in our study. There was no statistical association between marital status, PSS, and MBI; ≥ 2 children group had a significant high personal accomplishment but low depersonalization and emotional exhaustion scores. Line regression analysis showed a statistically significant relationship between PSS and emotional exhaustion and between age and depersonalization. **Conclusions:** Social factors such as gender and number of children affect the work life of our trainees.

Key words: Job burnout, Maslach burnout inventory, perceived stress

INTRODUCTION

Job burnout defines a state of physical and mental exhaustion commonly observed in physicians, surgeons, nurses, and other health care workers. Jackson has identified potential stressors in the operating room, such as the noisy environment and poorly designed work spaces; added to the list may be long working hours, fatigue, demanding interpersonal relations, the need for sustained vigilance, work overload, fear of litigation, and unskilled leadership by superiors.^[1,2] As a result, anesthesiology is a stressful

field.^[3] Today, we also know that some stress appears to be necessary and beneficial. However, if an individual is exposed to uncomfortably high levels, psychologic difficulties may result. Where should the line be drawn between beneficial stress and harmful stress? If an individual feels obligated to respond to a situation but feels unable to cope with the demands, burnout begins.^[4] Nyssen *et al.* found that mean stress levels among anesthesiologists were not higher than the other working group populations studied.^[5] This is consistent with the premise that, although anesthesia may well be stressful, anesthesiologists develop coping mechanisms over time. However, inexperienced trainee anesthesiologists seem to be vulnerable.^[6,7]

The aim of this study was to identify and measure the stress perception and job burnout in trainee anesthesiologists.

METHODS

From October 2009 to June 2010, we conducted a study

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to measure the perceived stress and job burnout in trainee anesthesiologists. In Turkey, Istanbul is the biggest metropolitan city almost with 13 million population. For that reason most of the education and training hospitals are present in Istanbul. A majority of (almost 60%–70%) Turkish anesthesiologists receive residency training in Istanbul. The study was conducted as voluntary survey of 159 anesthesiology trainees who come from different parts of the country to Istanbul, in order to be an anesthesiology resident. Each participant answered the questions once during the study period. They were asked to fill out 3 pages of questionnaires consisting of 3 parts in which Part 1 included demographic data (age, gender, marital status, number of children, and years in training), Part 2 included the Perceived Stress Scale (PSS) for Turks (translated and validated to Turkish by Baltas *et al.* in 1998.)^[8,9] consisting of 10 items, each of which is answered on a scale from 0 (never) to 4 (very often) and has an internal consistency of 0.76 (Cronbach alpha coefficient). Part 3 included Maslach Burnout Inventory Scale (MBI).^[10] For many years the 22-item MBI has been used to measure burnout and is subdivided into 3 subscales: (a) Emotional exhaustion (9 items), (b) Lack of personal accomplishment (8 items), and (c) Depersonalization (3 items).

Emotional exhaustion subscale shows lack of emotional resources, in which the individual feels emotionally drained. Personal accomplishment subscale assesses feelings of doubt about one’s ability to perform tasks and lack of successful achievement in working with people.

Depersonalization is a kind of defense mechanism and this subscale measures an unfeeling and impersonal response toward recipients of one’s care. The subject is asked to answer each item on a scale from 0 (never) to 6 (every day). In Turkey, this scale was translated to Turkish and validated in 1992 by Ergin.^[11] In the Turkish version of the scale each item is answered on a scale from 0 (never) to 4 (every day). The MBI has an internal consistency of 0.81 (Cronbach alpha co-efficient).

Statistical analysis

Statistical calculations were performed with NCSS 2007 program for Windows. Besides standard descriptive statistical calculations (mean and standard deviation), one-way ANOVA was used in the comparison of groups, post hoc Tukey multiple comparison test was utilized in the comparison of subgroups, unpaired *t* test was used to compare the two groups and Chi-square test was performed for the evaluation of qualitative data. Spearman correlation test was used to determine the relationship between variables. Statistical significance level was established at $P < 0.05$.

RESULTS

A total of 159 trainee anesthesiologists participated in the study. One hundred and fifty-seven participants answered the questions. The response rate was 98.7%. Demographic data of the study are presented in Table 1.

In our results, when perceived stress was increased, emotional exhaustion and depersonalization increased but personal accomplishment decreased [Table 2]. Perceived stress was very high in the early years of training ($P < 0.05$) [Table 3]. Comparing the first year of training with the second and third year, we found that there was a significant difference between groups ($P < 0.05$) [Table 4].

Perceived stress was decreased in older ages. There was a negative correlation between age and emotional exhaustion and depersonalization but a positive correlation between age and personal accomplishment [Table 5].

Female anesthesiologists showed higher personal accomplishment, but lower depersonalization scores than

Table 1: Demographic data’s of the study

	Total n=157
Gender	
Female	79 (50.32)
Male	78 (49.68)
Marital status	
Single	65 (41.40)
Married	92 (58.60)
Number of children	
0	112 (71.33)
1	31 (19.75)
≥2	14 (8.92)
Year of training	
1	15 (17.44)
2	7 (8.14)
3	35 (40.70)
4	29 (33.72)
Age	31,14±3.82*

Values are expressed as number (%) of persons and mean±SD*; (n=157)

Table 2: Correlation between perceived stress scale and Maslach burnout inventory subscales

		Perceived stress scale
Emotional exhaustion	r	0,424
	p	0,0001
Personal accomplishment	r	-0,274
	p	0,001
Depersonalisation	r	0,332
	p	0,0001

Spearman correlation coefficient

male anesthesiologists [Table 6]. There was no statistical association between marital status, PSS, and MBI in our study [Table 7]. There was no statistical difference ($P=0.177$) in PSS between groups of no child, single child, and ≥ 2 children. Comparing the MBI scores of the no child group with ≥ 2 children group, we observed that the ≥ 2 children group showed a statistically significant high personal accomplishment but low depersonalization and emotional exhaustion scores [Table 8].

Linear regression analysis between PSS and emotional exhaustion, personal accomplishment and depersonalization gave an Adjusted R^2 value of 0.166.

While the relationship between PSS and Emotional

Exhaustion remained significant ($P=0.001$), the relationship between personal accomplishment and depersonalization was not found to be significant ($P=0.110, P=0.395$) [Table 9].

Linear regression analysis between age and PSS, emotional exhaustion, personal accomplishment, and depersonalization gave an Adjusted R^2 value of 0.137 value. The relationship between age and depersonalization was found to be significant ($P=0.006$). The other values did not reveal any significant relationship with age [Table 10].

DISCUSSION

Characteristics of “burnout” are emotional exhaustion, depersonalization, and lack of a sense of personal accomplishment. People affected by the burnout syndrome may show early signs of stress arousal (irritability, forgetfulness, sleep disorders), may attempt to compensate for stress (social withdrawal, increased cynicism, persistent tiredness) and suffer from exhaustion (exhibit depression or anxiety symptoms, chronic pain syndromes, or functional disorders of the cardiovascular or gastrointestinal system). Suicide, drug addiction, and increased rates of early retirement are frequent in anesthesiologists. Burnout not only places the individual at great risk for physical and psychologic dependence including substance misuse, but it may also lead to compromised safety.^[12-16] In the last 5 years more than 14 anesthesiology trainees and residents died from suicide in our country, so this study was conducted to understand the reason for this terrible social problem.

In our study, as expected, when perceived stress rose, emotional exhaustion and depersonalization increased, but personal accomplishment decreased.

In our country medical faculties and training and research

Table 3: PSS according to social variables of the study population

	n=157	PSS	P
Total		19,90±5,55	
Gender			
Female	79	20,42±5,8	0,245 *
Male	78	19,38±5,28	
Marital status			
Single	65	20,52±5,33	0,242*
Married	92	19,47±5,69	
Number of children			
0	112	20,36±5,25	0,177**
1	31	18,26±6,58	
≥ 2	14	19,93±5,14	
Year of training			
1	115	23,13±5,64	0,009**
2	7	20,57±4,99	
3	35	19,44±5,01	
4	29	18,48±6,8	

* Independent sample T test; ** One way analysis of variance; PSS = Perceived stress scale

Table 4: Relation between the year of training perceived stress scale and Maslach burnout inventory subscales

	1 st Year	2 nd Year	3 rd Year	4 th Year	F	P
Perceived stress scale	23,13±5,64	20,57±4,99	19,44±5,01	18,48±6,8	4,01	0,009
Emotional exhaustion	20,16±6,86	20,39±5,66	17,89±7,48	17,31±5,37	1,67	0,178
Personal accomplishment	21,32±5,24	20,74±5,4	22,4±5,64	22,79±4,48	0,91	0,437
Depersonalisation	7,1±5,5	8,26±4,81	5,98±3,82	6,03±3,77	1,64	0,184
Two sample T test with tukey adjustment	Perceived stress scale					
1 year / 2 year	0,349					
1 year / 3 year	0,029					
1 year / 4 year	0,009					
2 year / 3 year	0,864					
2 year / 4 year	0,546					
3 year / 4 year	0,889					

Two sample t-test with tukey adjustment

hospitals play an important role in anesthesiology training. While training and research hospitals work trainees in with anesthesia technicians or experienced anesthesia nurses, young trainees in hospitals affiliated with medical schools work alone in the operating room. The number of specialist anesthesiologists or trainee/supervisor ratio may differ among hospitals. Trainees who work with experienced nurses or technicians and under the supervision of an anesthesiology staff may have less stress levels. The

presence of skilled assistance of the anesthesia nurse technician may be the greatest factor in reducing stress in our training hospitals. As the number of anesthesiologists was well below the need, nurse anesthetists and anesthesia technicians were the main providers of anesthesia in our country and training was basically a relationship between trainer and apprentice. So we studied a group of trainees who work in training and research hospitals with the help of anesthesiology technician or nurse. Regardless of a medical school education, an experienced nurse or technician can usually handle most situations without the assistance from the resident. Lack of control of trainees in their own field may cause feelings of inadequacy and low scores for sense of personal accomplishment. This may explain the increase in perceived stress scale we observe in residents at the early stages of their residency training. Widening the scope of this study with residents from hospitals affiliated with medical school is among our goals for future studies.

Table 5: Age, perceived stress scale and Maslach burnout inventory subscales

		Age
Perceived stress scale	r	-0,264
	p	0,003
Emotional exhaustion	r	-0,318
	p	0,0001
Personal accomplishment	r	0,225
	p	0,012
Depersonalisation	r	-0,391
	p	0,0001

Spearman correlation coefficient

Table 6: Gender, perceived stress scale, and Maslach burnout inventory subscales Spearman correlation coefficient

	Male	Female	t	P
Perceived stress scale	19,38±5,28	20,42±5,8	-1,17	0,245
Emotional exhaustion	19,15±6,87	18,05±6,37	1,04	0,298
Personal accomplishment	21,05±5,41	22,76±4,89	-2,08	0,039
Depersonalisation	7,41±4,47	6,1±3,96	1,98	0,047

Independent t Test

Table 7: Marital status, perceived stress scale and Maslach burnout inventory subscales

	Married	Single	t	P
Perceived stress scale	19,47±5,69	20,52±5,33	-1,18	0,242
Emotional exhaustion	17,78±6,68	19,75±6,41	-1,85	0,066
Personal accomplishment	22,27±5,13	21,4±5,32	1,03	0,303
Depersonalisation	6,74±4,1	6,77±4,51	-0,04	0,965

Independent t Test

Table 8: Number of child, perceived stress scale, and Maslach burnout inventory subscales

	No child	Single child	≥2 Child	F	P
Perceived stress scale	20,36±5,25	18,26±6,58	19,93±5,14	1,75	0,177
Emotional exhaustion	19,49±6,68	16,71±6,4	15,64±5,08	3,81	0,024
Personel accomplishment	21,38±5,08	22,29±5,17	25,36±5,24	3,88	0,023
Depersonalisation	7,38±4,39	5,68±3,81	4,14±2,45	5,06	0,007

Two sample T test with tukey adjustment	Emotional exhaustion	Personel accomplishment	Depersonalisation
No child / Single child	0,092	0,652	0,112
No child / ≥2 child	0,046	0,018	0,016
Single child / ≥2 child	0,867	0,153	0,486

One way analysis of variance ; Two sample t-test with tukey adjustment

In our study, perceived stress decreased with increasing age. There was a negative correlation between age and emotional exhaustion and depersonalization but, positive correlation with personal accomplishment.

Increased personal accomplishment may be explained with Turkish traditional respect for elders. More experienced trainees may have undertaken mentoring roles and have become able to give advice on coping strategies to younger colleagues.

Female anesthesiologists have higher personal accomplishment, but lower depersonalization scores than male anesthesiologists. This result may be explained by the fact that most of our female anesthesiology trainees (85%) were married. Bringing up children, a traditional role for women, is perceived as personal accomplishment in our country. Maternal feelings may prevent the development of depersonalization.

These data are correlated with the “number of children.” In our study, there was no statistical difference in PSS

Table 9: Multivariate analyses of perceived stress scale with subscales of Maslach burnout inventory

Model summary									
Model	R	R square	Adjusted R square	Std. error of the estimate	Change statistics				
					R Square change	F change	df1	df2	Sig. F change
1	,426 ^a	,182	,166	5,073	,182	11,317	3	153	,000

a. Predictors: (Constant), Depersonalization, Personal accomplishment, Emotional exhaustion

Coefficients ^a					
Model	Unstandardized coefficients		Standardized coefficients		
	B	Std. error	Beta	t	Sig.
1 (Constant)	17,529	2,670		6,566	,000
Emotional exhaustion	,255	,077	,304	3,307	,001
Personal accomplishment	-,139	,087	-,131	-1,606	,110
Depersonalization	,103	,120	,079	,852	,395

a. Dependent variable: Perceived stress scale

Table 10: Multivariate analyses of age with perceived stress scale and subscales of Maslach burnout inventory

Model summary									
Model	R	R square	Adjusted R square	Std. error of the estimate	Change statistics				
					R Square change	F change	df1	df2	Sig. F change
1	,406 ^a	,165	,137	3,556	,165	5,883	4	119	,000

a. Predictors: (Constant), Depersonalization, Perceived stress scale, Personal accomplishment, Emotional exhaustion

Coefficients ^a					
Model	Unstandardized coefficients		Standardized coefficients		
	B	Std. error	Beta	t	Sig.
1 (Constant)	36,075	2,507		14,392	,000
PSS	-,056	,069	-,073	-,808	,421
Emotional exhaustion	-,082	,062	-,138	-1,319	,190
Personal accomplishment	-,020	,069	-,028	-,293	,770
Depersonalization	-,264	,095	-,294	-2,791	,006

a. Dependent variable: Yab; PSS - Perceived stress scale

between groups of no child, single child, and ≥ 2 children. But we saw that there was a significant association with the number of child and MBI subscales.

Comparing the no child group with ≥ 2 children, we observed that in ≥ 2 children group has significant high personal accomplishment but low depersonalization and emotional exhaustion scores [Table 8]. In Turkey the term “personal accomplishment” includes children and family. Marriage and family responsibilities may represent social support. Similar results were observed with the study of Castelo-Branco *et al.*, in which being single was shown to be a predisposing factor for the development of burnout.^[17] But there was no statistical correlation between marital status, PSS, and MBI in our study. This result also explains with our trainees that never live alone. A majority of (almost 60%–70%) Turkish anesthesiologists receive residency training in Istanbul. They take a placement examination after graduating from medical school. We work with trainees from different parts of the country who mostly live with a

relative. Many families move to the city for the education of their child. We think that the positive social support of the family plays an important role on perceived stress.

This study has highlighted the job burnout and level of stress of anesthesiology trainees in Turkey. Limitations of this study include the fact that the classic PSS and MBI couldn't be used in Turkey, because of the language difference. This may be a shortcoming of our study.

In conclusion, as we look over the results, we discuss that we have to manage general tests or exams for our trainees (this is very rare in our country), or we can set a reward system for stimulating their personal accomplishment degrees in our country. Mannequin-based simulation systems may be a way to explore their capabilities as anesthesiologists and help them to be aware of what they know and don't know. Social factors such as gender and number of children play an important role in the professional life of our trainees.

REFERENCES

1. Jackson SH. The role of stress in anaesthetists' health and wellbeing. *Acta Anaesthesiol Scand* 1999;43:583-602.
2. Morais A, Maia P, Azevedo A, Amaral C, Tavares J. Stress and burnout among portuguese anaesthesiologists. *Eur J Anaesthesiol* 2006;23:433-9.
3. Kain ZN, Chan KM, Kaz JD, Fleisher L, Doler J, Rosenfeld LE. Anaesthesiologists and acute perioperative stress: A cohort study. *Anesth Analg* 2002;95:17-83.
4. Smith AF. Reaching the parts that are hard to reach: Expanding the scope of professional education in anaesthesia. *Br J Anaesth* 2007; 99:453-6.
5. Nyssen AS, Hansez I, Baele P, Lamy M, De Keyser V. Occupational stress and burnout in anaesthesia. *Br J Anaesth* 2003;90:333-7.
6. Larsson L, Rosenqvist U, Holmstrom I. Being a young and inexperienced trainee anesthetist: A phenomenological study on ought to working conditions. *Acta Anaesthesiol Scand* 2006;50:653-8.
7. Kluger MT, Bukofzer M, Bullock M. Anaesthetic assistants: Their role in the development and resolution of anaesthetic incidents. *Anaesth Intensive Care* 1999;27:269-74.
8. Cohen S, Kamarck T, Mermelstein R. A global measure of perceived stress. *J Health Soc Behav* 1983;24:385-96.
9. Baltas Z, Atakuman Y. Standardization of the perceived stress scale: Perceived stress in turkish middle managers: STAR (Stress and Anxiety Research Society) 19th International Conference, Bogazici University press; 1998, Istanbul, p. 37.
10. Maslach C, Jackson SE. *Maslach Burnout Inventory Manual*, 2nd edn. Palo Alto: Consulting Psychologists Press; 1986.
11. Ergin C. Job burnout in doctors and nurses with using Maslach burnout inventory. VII. National Congress of Psychology Scientific Reports, Ankara: Society of Turkish Psychologists Press, 1992. p. 143-154.
12. Lederer W, Kinzl JF, Trefalt E, Traweger C, Benzer A. Significance of working conditions on burnout in anesthetists. *Acta Anaesthesiol Scand* 2006;50:58-63.
13. Helliwell PJ. Suicide among anaesthetists in training. *Anesthesia* 1983;38:1097.
14. McNamee R, Keen RI, Cockhill CM. Morbidity and early retirement among anaesthetists and other specialists. *Anaesthesia* 1987;42:133-40.
15. Gravenstein JS, Kory WP, Marks RG. Drug abuse by anesthesia personnel. *Anesth Analg* 1983;62:467-72.
16. Weeks AM, Buckland MR, Morgan EB, Myles MR. Chemical dependence in anaesthetic registrars in Australia and New Zealand. *Anaesth Intensive Care* 1993;21:151-5.
17. Castelo-Branco C, Figueras F, Eixarch E, Quereda F, Cancelo MJ, González S, *et al.* Symptoms and burnout in obstetric and gynaecology residents. *BJOG* 2007;45:63-84.

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