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Job Burnout and Its Related Factors Among Surgical Technologists

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ABSTRACT

Introduction: Job burnout is a long-term response to job-related emotional and interpersonal stressors. These stressors are associated with individual, interpersonal, and organizational factors.

Objective: This study aimed to determine the degree of burnout and its related factors among surgical technologists.

Materials and Methods: This analytical cross-sectional study was conducted in hospitals affiliated with the Iran University of Medical Sciences. A total of 125 surgical technologists were recruited by stratified sampling method. The study data were collected using a demographic questionnaire and Maslach Burnout Inventory (MBI) and then analyzed by the independent t-test, 1-way analysis of variance, and multiple linear regression with a simultaneous model.

Results: More than half of the participants (52%) were in the age group of fewer than 30 years. The Mean±SD scores of job burnout in terms of intensity and frequency were 47. 88±17.5 and 47. 95±17.42, respectively. The mean job burnout scores of the majority of surgical technologists in dimensions of emotional exhaustion (intensity), depersonalization (intensity and frequency), and reduced personal accomplishment (intensity and frequency) were at a low level, but it was at a moderate level in the dimension of emotional exhaustion (frequency) among more than half of them. Through a multiple regression, the identified predictors of job burnout (frequency) were education level (β=9.377, 95%CI; 1.618-17.136, P<0.05) and work experience (β=-21.091, 95%CI; -38.201- -3.980, P<0.05). Meanwhile, education level (β=8.320, 95%CI; 0.568- 16.073, P<0.05), work experience (β=-30.976, 95%CI; -54.715 - -7.236, P<0.05), and hours of night shifts per month (β=-10.660, 95%CI; -18.205- -3.115, P=0.01) predicted job burnout (intensity).

Conclusion: The job burnout of more than half of surgical technologists in the dimension of emotional exhaustion (frequency) was at a moderate level. Novice workers and operating room BScs suffered more from job burnout than those with an Associate degree and experienced workers. In this regard, healthcare and planner providers must pay attention to operating room BScs, especially novice workers.

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Highlights

- Job burnout was at a moderate level among more than half of surgical technologists in the dimension of emotional exhaustion in terms of frequency.

- Job burnout of most surgical technologists in the dimensions of emotional exhaustion (intensity), depersonalization, and reduced personal accomplishment (intensity and frequency) were at a low level.

- With increasing the educational level, surgical technologists' job burnout increases.

- With increasing work experience, surgical technologists' job burnout decreases.

Plain Language Summary

Operating room staff is at risk of several potential hazards that can adversely affect their physical and mental condition and performance that are eventually lead to job burnout. Job burnout refers to work-associated fatigue, unemotional responses to those receiving treatment, and failure to succeed in one's work. Surgical technologists are responsible for the safety and comfort of patients in the operating room and ensuring the quality of care during patient operation. Therefore, any negligence on their part may endanger the life of patients. As surgical technologists are vulnerable to job burnout and its complications, their physical and mental health should not be overlooked. Therefore, this study aimed to determine the degree of burnout and its related factors among surgical technologists. This study showed that the job burnout level was moderate in more than half of surgical technologists in the dimension of emotional exhaustion (frequency). Novice workers and operating room BScs suffer more from job burnout than those with an Associate degree and experienced workers.

Introduction

Healthcare-related jobs have a lot of stress because of their association with human health and lives [1]. Healthcare centers, hospitals, and their different wards, especially Operating Rooms (ORs), are complex, stressful, and potentially dangerous environments. The medical staff in these rooms, including surgical technologists, are constantly exposed to stressors [2] and prone to job burnout. They are at risk of a long list of potential hazards, including occupational injuries, work stress, toxic and infectious agents, radiation, noise, anesthetic gases, working late with a few colleagues, exposure to non-physiological situations for a long time, and perturbation in the workplace. These stressors can negatively affect working life, physical and mental condition, motivation, and performance of surgical technologists [3].

Job burnout includes three main dimensions: emotional exhaustion (overextension and work associated fatigue), depersonalization (unfeeling and impersonal responses to those receiving services, care, treatment, or training), and reduced personal accomplishment (limited competence and failure to achieve success in one's work) [4]. Job burnout leads to a chronic fatigue syndrome, decreased job satisfaction, or even intention to leave, which ultimately affects the quality of healthcare services [5].

In research conducted by Sillero and Zabalegui in Spain, the average burnout of operating room nurses on emotional exhaustion and depersonalization dimensions was low, and reduced personal accomplishment was at a moderate level. Their results showed that the operating room was an unfavorable work environment for nurses and organizational factors played an essential role in predicting burnout [6]. Findik also conducted a study in Turkey and showed that burnout in the operating room in Emotional Exhaustion (EE), Depersonalization (DP), and reduced Personal Accomplishment (PA) dimensions were moderate, low, and high among nurses, respectively [3]. A study has indicated that increasing job burnout augments the tendency to leave the profession among operating room staff [4].

Surgical technologists are responsible for the safety and comfort of patients in the operating room [7] and ensuring the quality of care during patient operation [6], so their physical and mental health should not be overlooked. The common goal of the surgical team is

to provide effective, systematic, and safe care, and the failure of each member to perform his or her role can seriously impact the success of the whole team [8]. Surgical technologists are vulnerable to job burnout and its complications; therefore, any negligence on their part may endanger the life of patients.

Given the limited number of studies on job burnout of surgical technologists, we decided to conduct the present study to determine the job burnout prevalence and related factors among the surgical technologists working in the teaching hospitals affiliated with the Iran University of Medical Sciences (IUMS) Tehran.

Materials and Methods

This analytical cross-sectional study is part of research that was conducted in 2017. The study population included all surgical technologists working in the operating rooms of IUMS teaching hospitals. To determine the sample size, we used the formula considering 95% confidence, 80% test power, and a 2-sided test. In this formula, the C value for surgical technologists was assumed to be 0.25. Finally, the sample size was calculated to be 125. The inclusion criterion was having an Associate or BSc degree in Operating Room Technology and no history of mental illness and use of psychotropic drugs, chronic diseases, disability, physical disability, and severe stress in the past month (death of loved ones, divorce, and severe accidents). The stratified sampling method was used for recruiting the research samples. In this way, all centers (nine centers) were entered into the study, and according to the number of personnel in each center, the staff ID numbers were written on small sheets of paper. Then, the numbers were randomly selected by a person not participating in the study, and the obtained number was matched with the number in the staff list. Then, the matched subject was selected and sampled.

The research tools comprised two questionnaires: the first questionnaire was related to the demographic information of surgical technologists, including age, gender, marital status, work experience, type of shift work, education and income level, night shift hours per month, and employment status.

The second questionnaire was the Maslach Burnout Inventory (MBI) [9], one of the most common tools for measuring job burnout. It has 22 items and is scored on a 7-point Likert scale evaluating burnout in dimensions of frequency and intensity. Each job burnout scale is assessed separately in terms of frequency and intensity at three levels: high, medium, and low. Out of 22 items, 9, 5, and 8 are concerned with EE, DP, and PA, respectively. In this study, the scores related to the personal accomplishment dimension were inversely calculated for rating. The scoring of all three dimensions of job burnout in terms of frequency and intensity is shown in Table 1. Akbari et al. determined the factor validity and psychometric properties of the Persian version of the MBI [10].

We explained the purpose of the research to all participants who voluntarily participated in the study. At all stages of research, utmost confidentiality was observed in maintaining personal information, and the anonymous questionnaire was self-reportedly completed by the research units themselves in the presence of the researcher. A total of 150 questionnaires were distributed among the surgical technologists of different hospitals, of which 25 questionnaires were delivered incompletely. Finally, 125 complete questionnaires were received and used in this study.

Table 1. Calculation of job burnout based on Maslach questionnaire

Dimensions of Job Burnout		Standard Score		
		Low	Medium	High
Reduced personal accomplishment	Frequency	≤33	34-39	≥40
	Intensity	≤36	37-43	≥44
Depersonalization	Frequency	≤5	6-11	≥12
	Intensity	≤6	7-14	≥15
Emotional exhaustion	Frequency	≤17	18-29	≥30
	Intensity	≤25	26-39	≥40

Table 2. Demographic characteristics of surgical technologists

Variables		No. (%)
Gender	Female	99(79.2)
	Male	26(20.8)
Age(y)	>30	65(52)
	30-40	51(40.8)
	≥40	9(7.2)
Marital status	Single	56(44.8)
	Married	69(55.2)
Education level	Associate degree	26(20.8)
	BSc	99(79.2)
Work experience (y)	>10	69(55.2)
	10-20	52(41.6)
	≥20	4(3.2)
Income	≥80	60(48)
	<80	65(52)
Type of work shift	Fixed morning	7(5.6)
	Circulating	118(94.4)
Hours of night shifts per month	>12	62(49.6)
	12-24	26(20.8)
	24-36	14(11.2)
	<36	23(18.4)
Employment status	Obligatory commitments	31(24.8)
	Company hired	25(20)
	Contractual	24(19.2)
	Formal and contractual	45(36)

Statistical analysis was performed using IBM SPSS Statistics for Windows, version 23.0 (IBM Corp., Armonk, NY, USA). The normal distribution of data was confirmed by the Kolmogorov-Smirnov test. The t-test and 1-way ANOVA were employed to test the statistical relationship of job burnout dimensions with two-variate and multi-variate analyses, respectively. Variables with a significance level of <0.2 entered the multiple linear regression model. P=0.05 was considered the significance level of the tests in the present study.

Results

One hundred and twenty-five surgical technologists participated in the study. More than half of the participants (52%) were in the age group of less than 30 years. The majority of the participants (79.2%) were women. Most participants (79.2%) held BScs in Operating Room Technology. About 55.2% of the participants had a spouse, and 44.8% were single (Table 2).

Table 3. Distribution of samples frequency according to different burnout dimensions

Dimensions of Job Burnout		No. (%)	
		Per Frequency	Per Intensity
Emotional exhaustion	Low	43(34.4)	85(68)
	Medium	56(44.8)	31(24.8)
	High	26(20.8)	9(7.2)
	Mean±SD	22.03±10.72	21.79±10.38
Depersonalization	Low	79(63.2)	78(62.4)
	Medium	31(24.8)	36(28.8)
	High	15(12)	11(8.8)
	Mean±SD	5.26±5.72	5.66±5.79
Reduced personal accomplishment	Low	120(96)	123(98.4)
	Medium	3(2.4)	2(1.6)
	High	2(1.6)	0(0)
	Mean±SD	20.66±7.80	20.42±6.88

According to the results, mean and standard deviation scores of job burnout in EE in terms of intensity and frequency were moderate; the degree of job burnout in DP in terms of intensity and frequency was low. Finally, the rate of job burnout in PA in terms of intensity and frequency was low (Table 3).

Initially, according to the results of t-test and 1-way ANOVA, a multiple linear regression test was used to determine the effect of variables on burnout. Normal data distribution was examined before the regression test (Table 4).

According to the results of multiple linear regression model, educational level (β=8.320, 95%CI; 0.568- 16.073, P<0.05), work experience (β=-30.976, 95%CI; -54.715 - -7.236, P<0.05) and hours of night shifts per month (β=-10.660, 95%CI; -18.205- -3.115, P=0.01) predicted job burnout (intensity). This finding means that the mean job burnout (intensity) in the BSc is 8.320 units higher than those with the Associate degree. Also, the mean job burnout (intensity) of surgical technologists with ≥20 years of work experience is 30.976 units less than surgical technologists with <10 years of work experience. Finally, the mean job burnout (intensity) of surgical technologists with 12-24 hours of night shifts per month is 10.660 units less than surgical technologists who have 12> hours per night of night shifts. Meanwhile, the identified predictors of job burnout (frequency) were education level (β=9.377; CI: 1.618, 17.136; P<0.05) and work experience (β=-21.091; 95%CI: -38.201, -3.980; P<0.05). This finding means that the mean job burnout (frequency) in the surgical technologists with BSc is 9.377 units higher than that in those with the associate degree. Also, the mean job burnout (frequency) of surgical technologists with ≥20 years of work experience is 21.091 units less than that in surgical technologists with >10 years of work experience (Table 5).

Discussion

According to the present study results, the EE of surgical technologists was at a low level in terms of intensity and at a moderate level in terms of frequency. The rate of EE in this study (frequency) was consistent with research conducted in Iran [11] and Turkey on operating room nurses [3, 12]. Still, it was not compatible with another study that indicated a high level [13]. Also, in terms of intensity, it was in line with studies conducted among operating room nurses in different cities in Iran [4, 14] and in other countries [6]. This finding is justified as the low intensity of EE relative to its frequency can point to those stressors that cause EE, but their intensity is perceived at a lower level by surgical technologists. It could be due to the way they deal with problems and the stressors that cause exhaustion.

Table 4. Results of analysis of t-test and 1-way ANOVA, the score of total burnout

Variables		Burnout, Mean±SD	
		Intensity	Frequency
Gender	Female	47.59±17.00	48.15±17.18
	Male	49.00±19.62	47.19±18.61
	P	0.715*	0.804*
Marital status	Single	48.75±20.17	48.32±20.00
	Married	47.17±15.11	47.65±15.14
	P	0.619*	0.832*
Education level	Associate degree	39.31±15.04	40.31±16.31
	BSc	50.13±17.47	49.96±17.21
	P	0.005*	0.011*
Income	≥80	48.38±16.71	48.38±16.80
	<80	47.42±18.32	47.55±18.09
	P	0.759*	0.791*
Type of work shift	Fixed Morning	50.14±9.14	50.71±9.23
	Circulating	47.75±17.89	47.79±17.79
	P	0.726*	0.668*
Age (y)	>30	51.57±17.31	51.02±17.09
	30-40	43.49±15.70	44.84±16.14
	≥40	46.11±23.96	43.44±23.99
	P	0.044**	0.120**
Work experience	>10	49.86±16.87	49.87±16.74
	10-20	46.67±17.60	47.00±17.52
	≥20	29.50±19.60	27.25±16.96
	P	0.062**	0.035**
Hours of night shifts per month	>12	49.58±17.96	48.81±18.37
	12-24	39.81±16.04	42.00±15.40
	24-36	45.71±15.50	46.86±17.51
	<36	53.74±16.57	53.04±15.85
	P	0.029**	0.157**
Employment status	Obligatory commitments	52.42±19.79	52.68±18.89
	Company hired	49.08±15.74	48.60±16.30
	Contractual	43.17±12.37	42.96±13.24
	Formal and contractual	46.60±18.76	47.00±18.56
	P	0.244**	0.220**

*t-test; **1-way ANOVA.

Table 5. Multiple regression analysis results of burnout and emotional exhaustion by intensity and frequency

Variables	Predictors		β	S.E	P	95%CI	
						Lower	Upper
Burnout (intensity)	Educationa level	BSc	8.320	3.914	0.036*	0.568	16.073
		Associate degree (Reference)	-	-	-	-	-
	Age (y)	<30 (Reference)	-	-	-	-	-
		30-40	-6.133	4.800	0.204	-15.640	3.374
		≥40	10.699	8.849	0.229	-6.827	28.225
	Work experience	>10 (Reference)	-	-	-	-	-
		10-20	1.725	4.763	0.718	-7.708	11.158
		≥20	-30.976	11.986	0.011	-54.715	-7.236
	Hours of night shifts per month	12> (Reference)	-	-	-	-	-
		12 -24	-10.660	3.809	0.006	-18.205	-3.115
		24-36	-4.411	4.833	0.363	-13.984	5.161
		36>	2.941	4.012	0.465	-5.006	10.888
Burnout (frequency)	Education level	Associate degree (Reference)	-	-	-	-	-
		BSc	9.377	3.919	0.018*	1.618	17.136
	Work experience (y)	>10 (Reference)	-	-	-	-	-
		10-20	-0.259	3.265	0.937	-6.723	6.206
		≥20	-21.091	8.643	0.016*	-38.201	-3.980

According to the present study results, the DP of surgical technologists (intensity and frequency) was at a low level. That finding was in agreement with the findings of some studies [3, 11, 14] but was not consistent with other studies that reported moderate [4, 12] and high [13] levels of DP. To justify this inconsistency, it can be stated that the low level of DP in employees shows their positive attitudes toward service recipients in addition to the existence of human relationships within the organization.

According to the present study results, PA (intensity and frequency) were at a low level. This finding was consistent with the findings of some studies [11, 12] but against other studies that indicated a moderate level [6] or a high level of PA [3, 4, 14]. In justifying this finding, it can be stated that surgical technologists have an increased sense of efficiency and mastery despite feeling the pressure of work, which can be a function of close and effective communication between surgical technologists and clients. When patients feel stressful conditions, surgical technologists can provide a relaxed environment for clients by understanding them and relieving their stress. Besides, their presence as team members in advanced surgeries can solve patients' problems. Surgical technologists can positively impact patients' lives through their duties, leading to job satisfaction and a sense of success in surgical technologists.

In the present study, the findings showed that the frequency and intensity of job burnout vary by the education level of surgical technologists, which were consistent with some previous studies in this field that showed a higher level of education was associated with the rate of EE [15] and DP [16] in all three dimensions of job burnout [17]. However, other investigations reported no significant relationship between education level and job burnout dimensions [4, 18, 19]. This discrepancy is justified as surgical technologists with more experience or higher academic level have more responsibility for saving the patient's life and seamlessly performing

medical procedures. This higher sense of responsibility can lead to higher expectations from oneself and others, as well as higher job burnout. On the other hand, this finding may be due to the fact that until a few years ago, only holders of associate degrees worked as surgical technologists in Iran, and after continuing their studies and achieving higher degrees, they did not possess better job status and income, which led to dissatisfaction and thus increased job burnout in them.

In the present study, the findings showed that the frequency and intensity of job burnout varied by work experience of surgical technologists, which were consistent with the previous research in this field that showed a higher work experience were associated with the rate of PA [18]. However, other investigations reported no significant relationship between work experience and job burnout dimensions [4, 16]. This finding might be explained because the operating room technologists with higher experience could better manage work stress and, as a result, suffer less from burnout.

In the present study, the findings showed that the intensity of job burnout depends on the hours of night shifts per month of surgical technologists. It seems that in recent studies, this variable has been less studied.

The results of this study showed that the average job burnout of most surgical technologists in dimensions of EE (intensity), DP (intensity and frequency), and PA (intensity and frequency) was low but was moderate in more than half of them in the dimension of EE (frequency). Novice workers and operating room BScs suffered more from job burnout than those with associate degrees and experienced workers.

The results of this study regarding the effect of demographic factors on job burnout in some cases are different from those of other studies because different working conditions and associated factors may affect this field. Job burnout depends on a variety of organizational, interpersonal, and personal characteristics. One of the limitations of this study was that the results could not be generalized to all health centers in the country. It is suggested that these relationships be examined in other areas, and a comparison was made with private hospitals.

Ethical Considerations

Compliance with ethical guidelines

Ethical permission was obtained from the Research Ethics Committee of IUMS (Code: IR.IUMS.REC 2016.9411101009).

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Authors' contributions

Study concept and writing the original draft: Sara Mohammadi, Sedigheh Hanani, and Fardin Amiri; Data collection: Sara Mohammadi and Nasrin Kamali; Data analysis: Nimamali Azadi and Sara Mohammadi; Reviewing the final edition: All authors.

Conflict of interest

The authors declared no conflict of interest.

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