

## RESEARCH ARTICLE

# Job satisfaction, Career Burnout, and Work-Related Well-Being Prevalence among Orthopedic Surgeons: A Nationwide Study

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## Abstract

**Background:** Burnout is a well-known consequence of chronic stress. Orthopedic surgery is among the most desired specialty among Iranian medical students. The nature of the job, the income, and the ability to deal with stress can all be stressful factors for orthopedic surgeons. Nonetheless, little is known about how these medical doctors work and live in Iran. The present study aimed to assess job satisfaction, engagement, and burnout among Iranian orthopedists.

**Methods:** A nationwide online survey was conducted in Iran. Job satisfaction, engagement, and burnout were evaluated using the job description index (JDI), Utrecht Work Engagement Scale, and Maslach Burnout Scale. They were also asked some additional questions related to career choice.

**Results:** A total of 456 questionnaires (41% response rate) were retrieved. Overall, 56.8% of the participants experienced burnout. The burnout levels significantly differed based on age, years from graduation, working in public hospitals, operating more than 10 patients in a week, monthly income, having less than two children, and being single ( $P < 0.05$ ). They scored higher on work questions on the present job and jobs in general but lower scores on pay and opportunities for promotion.

**Conclusion:** In a national study of orthopedic surgeons, their primary concern in JDI was “pay and promotion.” Burnout was substantially associated with respondents’ characteristics, such as younger age and having fewer children. This will lead to impaired performance, increased patient complaints, and the tendency to immigrate.

**Level of evidence:** V

**Keywords:** Burnout, Job satisfaction, Orthopedic surgeon, Profession, Risk factors, Surveys and questionnaires

## Introduction

Prolonged exposure to physical and spiritual stress leads to burnout. Burnout is assumed to be induced by long-term unresolved work-related stress and governed by problem-solving abilities. It

is defined as concomitancy of emotional exhaustion (EE), depersonalization (DP), and lack of personal accomplishment (PA).<sup>1</sup> Burnout can lead to a loss of motivation, function, and, the worst-case scenario,

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hatred of oneself and others. According to past research, surgeons run a high risk of burnout.<sup>2,3</sup> Meanwhile, orthopedic surgeons are more prone to burnout due to the large number of patients, the variety of daily procedures, the handling of patients with multiple trauma injuries, and other occupational stresses.<sup>2</sup>

Short-term stressful situations may even be beneficial to professional and performance development. On the other hand, long-term occupational stress storms can lead to emotional depletion and, as a result, burnout.<sup>4</sup> Although orthopedic surgery appears to be a career with a good socioeconomic status among the general public, occupational obstacles in this sector are rarely explored or investigated in Iran. Recently, the burnout rate was frequently studied among practitioners of different medical fields.<sup>5,6</sup> Shaher Al-Otaibi et al. reported that 40% of orthopedic surgeons in Saudi Arabia suffered from emotional exhaustion and depersonalization.<sup>7</sup> According to Sargent et al., 28% of orthopedic surgeons suffer from burnout, and 17% have family problems.<sup>8</sup> Recent studies demonstrated a burnout rate of up to 70% among orthopedic surgeons.<sup>5,9</sup> Although one study of burnout in orthopedic surgeons was reported in Iran, it was not widespread.<sup>10</sup> Burnout is rising among orthopedic surgeons, leading to decreased quality of care, poor treatment outcomes, and patient discontent.

Furthermore, it may increase medical blunders and, consequently, medical complaints. There have also been stories of alcohol and substance abuse following burnout. Orthopedics, on the other hand, is one of the most popular medical school majors. Nonetheless, little is known about specialists' working and living conditions, and educating an orthopedic surgeon imposes high costs on the educational system of the country. A nation requires healthy, enthusiastic orthopedic physicians. As a result, the Iranian Orthopedic Association (IOA) evaluated the rate and magnitude of burnout and job satisfaction indicators among orthopedic physicians across the country as part of a national study. Aside from that, various validated questionnaires were used to examine diverse characteristics associated with burnout. To the best of our knowledge, it is the first nationwide study in Iran. The current study covered all levels of surgeons who had graduated from various hospitals in different cities.

## Materials and Methods

### Study design

This cross-sectional research project was approved by IOA and the Ethics Committee of Shahid Beheshti University of Medical Sciences (IR.SBMU.RETECH.REC.1400.048), accomplished in May and June 2021. Electronic questionnaires were designed online.

### Participants

The link address of forms plus an invitation letter were sent to orthopedic surgeons membered in IOA scattered nationwide via electronic mail and text message. Sending emails and messages were repeated two more times to remind the respondents. Moreover, it was shared in social groups of IOA members frequently.

### Variables and measurement

Electronic questionnaires were unnamed and contained five separate parts as defined following. Part one included a cover letter, the questionnaire instructions, and the purposes of the study. Part two had demographic questions except for their names. Moreover, it was comprised of some additional questions about the practice characteristics of respondents, such as marital and family status, training status, type of current employer, the weekly number of operations, monthly income, experience of workplace violence, and the respondent's willingness to immigrate from Iran.

Part three was the "Job Descriptive Index (JDI) questionnaire" in both English language and native local translation.<sup>11,12</sup> The reliability and validity of the Persian version of the JDI questionnaire have been confirmed in previous studies.<sup>13</sup> The JDI questionnaire investigates six different dimensions of job satisfaction, including work in the current job (18 items), people in your current job (18 items), the job in general (18 items), pay (9 items), promotion opportunities (9 items), and supervision (18 items). Items with "Yes" responses scored 3 points, and items with "No" answers scored 0 points, and finally, 1 point was assigned to the items with an answer of "Not sure." The score of subscales with nine items (pay and promotion) is multiplied by two, and the total score will be then calculated. A higher total score is correlated with a higher level of satisfaction. Failure to answer more than three sections was considered a missed questionnaire and excluded. Each section with more than three questions without answers from respondents was omitted, and the mean score of others was considered for that section. Failure to answer more than three sections was regarded as a missed questionnaire and excluded.

Part four was the "Utrecht Work Engagement Scale (UWES)" or "work and well-being survey" questionnaire in both English and Persian languages.<sup>14</sup> The reliability and validity of the Persian version of the questionnaire have been illustrated in previous studies.<sup>14</sup> This questionnaire includes three subscales, namely, vigor (6 items), dedication (5 items), and absorption (6 items). Each item is scored from 0-6 points. The answers to the UWES questionnaire were rated using a 7-point Likert scale (0-6). Higher total scores indicated a higher level of work engagement. Every questionnaire with 10 unanswered questions was considered a missed questionnaire.

The fifth part contained the "Maslach Burnout Inventory" questionnaire.<sup>15</sup> Professional burnout was measured using the Maslach Burnout Inventory (MBI), covering three dimensions: emotional exhaustion (EE; 9 items), depersonalization (DP; 5 items), and personal accomplishment (PA; 8 items). Answers to each question were scored according to the frequency with which a respondent encountered each situation on a 7-point scale from "never" (0 points) to "daily" (6 points). Scores for each dimension were further graded as high, medium, or low (high EE  $\geq$  27, low EE  $\leq$  18, high DP  $\geq$  10, low DP  $\leq$  5, high PA  $\geq$  40, low PA  $\leq$  33). A respondent would be considered burnt out if they had high scores in the EE or DP section.

### Statistical Analysis

Statistical analysis was performed using SPSS version 26.0 (SPSS Inc., Chicago, IL) and Excel 2013 (Microsoft Corp.). Continuous variables were expressed as the means  $\pm$  standard deviations. Categorical variables were presented as a percentage. Logistic regression analysis was used to identify predictors of burnout among respondents. The enter method was used to put all selected variables into the adjusted logistic regression model. The odds ratio (OR), associated confidence intervals, and P-values are reported. Differences were considered statistically significant with a two-tailed *P-value*  $< 0.05$ .

### Results

#### Participants

During the study period, a total of 1,088 orthopedic surgeons from all over the country were invited to participate in the survey. Among them, 456 (41%) orthopedic surgeons completed the online questionnaire. The final statistics did not include those who did not complete the questionnaires.

#### Descriptive data

All respondents' demographic and practice characteristics are listed in Table 1. The mean age of respondents was reported as  $48.06 \pm 10.88$  years, with a male/female ratio of 23:1. The majority of the respondents were male (95.8%). Regarding income, 32.2% of them had a monthly income of under 200 million Iranian Rials (IRR) (approximately  $< 800$  US dollars). The majority of respondents were orthopedic surgeons working full-time in university hospitals (33.3%). Moreover, 57.5% of respondents reported that they performed less than 10 operations in a week.

Attitudes towards practicing orthopedic surgery and thoughts about immigration during practice years were assessed on several subjective questions [Table 2]. A number of 365 (80%) respondents stated they would not recommend a career in orthopedic surgery to their children, and 323 (70.8%) cases would not recommend medical students choose orthopedic surgery for their residency program. Moreover, 327 (71.7%) respondents had thought about immigration while practicing in Iran. In addition, 246 (53.9%) cases suffered from sleep disturbance, and 236 (51.8%) subjects remembered an experience of working violence in the previous six months when responding to questionnaires.

#### Outcome data

Overall, more than half of the orthopedists (56.8%) had experienced burnout, according to the Maslach questionnaire. Among them, 30.9% of cases had severe burnout according to emotional exhaustion questions, and 47.4% of respondents had severe burnout based on depersonalization questions of the Maslach Burnout Inventory [Table 3].

Job satisfaction among the orthopedist surgeons was assessed using the JDI, and the results are summarized in supplemental appendices. Overall, the mean total JDI score for surveyed orthopedists was  $137.92 \pm 63.65$ .

Table 1. Demographic data / *Excluding single respondents			
Demographic and occupational data		N(456)	Percent %
Male/female gender ratio		437/19	95.8/4.2 %
Age	$\leq 35$	61	13.4%
	36-45	150	32.9%
	46-54	125	27.4%
	$\geq 55$	120	26.3%
Marital status	Married	405	88.8%
	Single	41	9%
	Divorced	7	3%
	Widow/widower	3	0.7%
Number of children*	0	64	12.5%
	1	106	20.7%
	$\geq 2$	235	66.8%
Years from graduation	Under 5 years	36	7.9%
	5-15 years	235	51.5%
	16-30 years	138	30.3%
	More than 30 years	47	10.3%
Monthly income	$< 200$ million IRR	147	32.2%
	200-400 IRR	149	32.7%
	400-600 million IRR	100	21.9%
	600-800 million IRR	23	4%
	800-1000 million IRR	5	1.1%
	$\geq 1000$ million IRR	32	7%
Days off per week	0-2 days	408	89%
	$> 2$ days	48	11%
Work structure	Private	116	25.4%
	University hospital	152	33.3%
	University + private	53	11.6%
	Other public hospitals	135	29.6%
Afternoon clinic days per week	$\leq 3$ days	186	40.8%
	$> 3$ days	270	59.2%
Weekly operation	0-10	262	57.5%
	11-20	121	26.5%
	21-29	35	7.7%
	$\geq 30$	38	8.3%

Table 2. Practice characteristics of respondents			
Attitude towards practicing orthopedic surgery (based on below questions)		N(456)	Percent %
Recommending orthopedic surgery to children?	Yes	91	20%
	No	365	80%
Recommending orthopedic surgery to medical students?	Yes	133	29.2%
	No	323	70.8%
Thoughts about immigration?	Yes	327	71.7%
	No	129	28.3%
Suffering from sleep disturbance?	Yes	246	53.9%
	No	210	46.1%
Working violence in previous six months?	Yes	236	51.8%
	No	220	48.2%

Orthopedic surgeons scored higher on questions of work on present job and job in general. Lower scores of respondents were related to sections of pay and opportunities for promotion. A higher score indicates a higher level of satisfaction.

### Main results

Logistic regression analyses were performed to assess the association between burnout and personal or career characteristics. Burnout levels significantly differed based on age scales, and respondents under 35 had the highest odds ratio (OR:3.35, Ci 95%: 1.84-6.09,  $P < 0.001$ ).

In addition, years from graduation and monthly income significantly differed between the two groups [Table 4]. Having more than two children was not significantly related to burnout; otherwise, two children in the family were significantly related to burnout ( $P=0.02$ ).

Supplemental appendices display the UWES scores of orthopedic surgeons on three different subscales. In general, the respondents scored ( $56.62 \pm 21.64$ ). Higher scores indicate that they were more enthusiastic about their work. Moreover, respondents scored significantly higher in the vigor subscale on all three dimensions of the UWES (vigor, dedication, and absorption).

Table 3. Maslach Burnout Inventory (MBI)			
Maslach Burnout Inventory		N(456)	Percent
Burnout	Total	259	56.8%
	Low ( $\leq 18$ )	192	42.1%
Emotional Exhaustion	Mod (19-26)	123	27%
	High ( $\geq 27$ )	141	30.9%
Depersonalization	Low ( $\leq 5$ )	115	25.2%
	Mod (6-9)	125	27.4%
	High ( $\geq 10$ )	216	47.4%
Personal Accomplishment	Low ( $\leq 33$ )	277	60.7%
	Mod (34-49)	97	21.3%
	High ( $\geq 40$ )	82	18%

**Table 4. Orthopedic surgeons' characteristics associated with burnout (high levels of either emotional exhaustion or depersonalization)**

Variable	N (%) burnout N=259	N (%) without burnout N= 197	OR	95 % CI	P-value	
Age	≤35	47 (18.1%)	14 (7.1%)	3.35	(1.84)-(6.09)	0.000
	36-45	94 (36.3%)	56 (28.4%)	1.67	(1.20)-(2.33)	0.002
	46-54	68 (26.3%)	57 (28.9%)	1.19	(0.83)-(1.69)	0.32
	≥55	50 (19.3%)	70 (35.5%)	0.71	(0.49)-(1.02)	0.06
Years from graduation	Under 5 years	29 (11.2%)	7 (3.6%)	4.14	(1.81)-(9.45)	0.001
	5-15 years	152 (58.7%)	83 (42.1%)	1.83	(1.40)-(2.39)	0.000
	16-30 years	59 (22.8%)	79 (40.1%)	0.74	(0.53)-(1.04)	0.90
	More than 30 years	19 (7.3%)	28 (14.2%)	0.67	(0.37)-(1.21)	0.19
Monthly Income	<200 million IRR	85 (32.8%)	62 (31.5%)	1.37	(0.98)-(1.90)	0.05
	200-400 million IRR	87 (33.6%)	62 (31.5%)	1.40	(1.01)-(1.94)	0.04
	400-600 million IRR	57 (22%)	43 (21.8%)	1.32	(0.89)-(1.96)	0.16
	600-800 million IRR	14 (5.4%)	9 (4.6%)	1.55	(0.67)-(3.59)	0.30
	800-1000 million IRR	2 (0.8%)	3 (1.5%)	0.66	(0.11)-(3.99)	0.65
	≥1000 million IRR	14 (5.4%)	18 (9.1%)	0.77	(0.38)-(1.56)	0.48
Number of Children	0	71 (27.4%)	39 (19.8%)	1.82	(1.23)-(2.69)	0.00
	1	66 (25.5%)	43 (21.8%)	1.53	(1.04)-(2.25)	0.02
	≥2	122 (47.1%)	115 (58.4%)	1.06	(0.82)-(1.36)	0.64
Hospital level	Private	62 (23.9%)	54 (27.4%)	1.14	(0.79)-(1.65)	0.45
	University	85 (32.8%)	67(34%)	1.26	(0.92)-(1.74)	0.14
	University + Private	31 (12%)	22 (11.2%)	1.40	(0.81)-(2.43)	0.21
	Other public hospitals	81 (31.3%)	54 (27.4%)	1.50	(1.06)-(2.11)	0.02
Marital status	Married	226 (87.3%)	179 (90.9%)	1.22	(1.01)-(3.67)	0.056
	Single	27 ( 10.4%)	14 (7.1%)	1.26	(1.03)-(1.53)	0.02
	Others	6 (2.3%)	4 (2%)	1.50	(0.42)-(5.31)	0.53
Weekly operation	0-10	144 (55.6%)	118 (59.9%)	1.22	(0.95)-(1.55)	0.10
	11-20	68 (26.3%)	53 (26.9%)	1.28	(0.89)-(1.83)	0.17
	21-29	23 (8.9%)	12 (6.1%)	1.91	(0.95)-(1.85)	0.05
	≥30	24 (9.3%)	14 (7.1%)	1.71	(0.88)-(3.31)	0.04
Days off per week	0-2 days	139 (53.7%)	104 (52.8%)	1.33	(1.03)-(1.72)	0.02
	>2 days	120 (46.3%)	93 (47.2%)	1.29	(0.98)-(1.69)	0.06

## Discussion

Job satisfaction is described as a person's sense of fulfillment due to their work. In other words, job satisfaction is nearly considered a job attitude. The

study by Fisher and Hanna in 1931 was the first to define job satisfaction precisely.<sup>16</sup> It was further improved by Locke et al. in 1970.<sup>17</sup> As an effective reflection of the



work, they added five aspects: “supervisors,” “jobs,” “work colleagues,” “compensation,” and “promotion opportunities”.<sup>17</sup>

The JDI questionnaire was used to assess job satisfaction among Iranian orthopedic surgeons. Our respondents were orthopedic surgeons from across the country who treat trauma patients and various subspecialties. According to the obtained scores of JDI questionnaire sections, the lowest results pertained to pay and promotion, raising concerns regarding our future orthopedic community in Iran. Unfortunately, this demonstrates that Iranian orthopedic surgeons are inattentive about improving their current situation, which may impact their performance.

The JDI scores for the section “jobs in general” demonstrated that participants were enthusiastic about their jobs. Low JDI questionnaire scores are primarily caused by frustration with the future and a lack of income. Our findings are not consistent with those reported in the study by Cunningham (2015), who found that orthopedic trauma surgeons had extraordinarily high levels of job satisfaction.<sup>18</sup> They did not use JDI to assess work satisfaction; instead, they used some specially devised questions. In contrast to our findings, a North American survey of trauma surgeons found that 70% of the doctors (only 2% of whom were orthopedic surgeons) would prefer to practice surgery again. In their study, job satisfaction was measured using two questions related to career choice: “would you prefer to become a physician/surgeon again?”<sup>19</sup>

The surgeon is responsible for not making mistakes and making proper judgments in a timely manner to save the patient’s life during surgical procedures. Even though this responsibility is stressful, surgeons should be able to perform better and overcome obstacles due to the stress. When persistent pressure is not appropriately controlled, the surgeon becomes fatigued, and their regular job performance is impaired.<sup>20</sup> Based on previous studies, the rising prevalence of job burnout among surgeons has drawn assiduous attention due to its adverse effects on their performance, such as increased patient complications.

According to the study by Harvey, burnout is a “silent epidemic” that has to be addressed.<sup>21</sup> Consequently, the Iranian Orthopedic Association (IOA) decided to address the problem. The first step was to conduct a nationwide survey to determine the prevalence of burnout among Iranian orthopedic surgeons. According to Maslach’s score, 56% of respondents were burnt out. Moreover, 60% had significantly lower personal accomplishment scores, 47.4% had a high level of depersonalization, and 30.3% had a high level of emotional exhaustion. Although some studies implied that a low “Personal Accomplishment” score is not necessarily indicative of burnout, it should be taken into account as a result of constant stress.<sup>22</sup>

In a similar vein, Ghoreyshian et al. revealed that half of the participants in their study in Iran were burnt out.<sup>23</sup> Only 180 residents and graduates of surgery were included in the study, which took place in a

limited area. Nonetheless, the present research did not include residents, and respondents came from all over the country. In a previous review article by Arora et al., burnout rates among orthopedic surgeons were reported to be 50%-60%, while this value was reported as 30%-40% among general surgeons. They found that orthopedic residents had the highest “emotional exhaustion” rates and “depersonalization”.<sup>1</sup>

A nationwide online survey was performed among 643 orthopedist trainees and 690 neurosurgeon trainees in China in the study by Jinli Yu et al. in 2020.<sup>5</sup> According to Maslach ratings, 46.97% of orthopedists and 42.32% of neurosurgeons were burnt out, with no significant difference between them. According to their findings, “being a senior trainee,” “getting divorced,” “working at a level II regional hospital,” and “low annual income” were significantly related to the incidence of burnout among both orthopedists and neurosurgeons. In our study, however, being a junior orthopedist with less than 15 years of experience was strongly associated with burnout. Furthermore, Jinli Yu reported that having more than one kid was highly associated with burnout among orthopedists; however, our findings revealed that having fewer than two children was significantly associated with burnout.

Moreover, in our study, being divorced and single were related to burnout. In a similar vein, having children was the sole factor independently related to fewer burnout symptoms in a study by van Wulfften Palthe et al. (2016)<sup>24</sup>. Cultural differences between communities should be considered when assessing burnout and job satisfaction rates. Researchers in work and organizational psychology have become increasingly interested in successful and positive work experiences. Work engagement was basically theorized by Kahn in 1990.<sup>25</sup> He defined it as the “attaching of organization memberships to the work roles: in engagement, people employ and express themselves physically, cognitively, emotionally, and mentally during role performances.”<sup>25</sup>

The most generally used work engagement scale in the original studies is the Utrecht Work Engagement Scale (UWES) was employed in the present study. This was the first study using UWES among Iranian orthopedists with a lower mean total score compared to the study by Jinli et al. in China. Previous studies have proved the significant correlations between surgeons’ work engagement, job satisfaction, and quality of life.<sup>26</sup> Accordingly, lower work engagement scores among Iranian orthopedists could result from job dissatisfaction, high rate, and hopelessness among them.

In a national study on 456 orthopedic surgeons, 56% of cases reported burnout, with their primary concern in JDI being “pay and promotion” status. Burnout was substantially related to respondents’ characteristics, such as younger age, being a junior physician, a high number of operations per week, not having free days per week, and having fewer children. The persistence of these issues will diminish motivation and work quality, particularly among young surgeons, who make up a

large percentage of orthopedic surgeons. This will lead to impaired performance, increased patient complaints, and the tendency to immigrate. The Iranian Association of Orthopedic Surgeons intends to provide evidence-based solutions to Community Health Trustees to manage the health of the orthopedic surgeons' community in the future.

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**Declaration of ethical approval for study:** This cross-sectional research project was approved in IOA and ethics committee of Shahid Beheshti University of Medical Sciences (IR.SBMU.RETECH.REC.1400.048) accomplished in May and June 2021.

**Declaration of informed consent:** We declare that there is no information (names, initials, hospital identification numbers, or photographs) in the submitted manuscript that can be used to identify patients.

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