

## Relationship between Misconduct of Medical Professionalism with Burnout Syndrome and Related Factors

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### ABSTRACT

**Background:** Burnout syndrome (BOS) is a common occupational disease amongst medical physicians; especially anesthesiologists. BOS is known to result in increased expenditure of the healthcare system and decreased patient satisfaction. In order to substitute for good conduct by its medical staff, Tehran University of Medical University established its own guidelines on professionalism as a substitute for professional conduct amongst its personnel. Learning and practicing professionalism is not only a requirement to be competent as a specialist, but also it results in increasing healthcare quality and patient satisfaction. There is a lack of studies on the relationship between BOS and professionalism.

Determination of the relationships between professionalism and BOS among TUMS anesthesiology residents.

**Methods:** In this cross-sectional study all anesthesiology residents completed three forms (demographic checklist, Maslach Burnout Inventory (MBI), and professionalism self-conduct). The results were primarily analyzed using STATA 14.0 and relationships were established via linear and binary regression.

**Results:** About 44 percent of residents met criteria for BOS. The risk of developing BOS was significantly higher for residents who adhered to the principles of respect and altruism and for residents training in one of our surveyed hospitals; whereas the risk of developing BOS would be reduced by increasing age and adherence to the principles of justice. Burnout subscales scores concerning emotional exhaustion and personal accomplishment were significantly related with higher self-reported scores of altruism and honesty-integrity respectively.

**Conclusion:** The chances of developing BOS could be enhanced by inadequate practice in the field of professional ethics. Therefore the importance of learning and competent practice of professionalism must be acknowledged. Age and professional climate were the most important demographic variables related to BOS in anesthesiology residents.

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## Introduction

**B**urnout syndrome (BOS) is a disorder described in the ICD-11 as an occupational phenomenon resulting from prolonged exposure to unattended workplace stress. It can be considered a subtype of adjustment disorder in the DSM-V [1]. BOS was first mentioned in 1974 by Herbert Freudenberg and is among the most common occupational hazards threatening the wellbeing of medical healthcare providers, especially physicians, with varying prevalence among medical residents throughout the world (20-40%) [2]. It consists of three distinct subscales including emotional exhaustion, depersonalization, and personal accomplishment which are evaluated and measured by the Maslach-burnout-inventory (MBI) [3]. The association of BOS with a range of medical and psychological conditions such as cardiovascular diseases, mood disorders, anxiety disorders, suicide, and substance abuse have been studied and confirmed. BOS is recognized as an occupational hazard and a threat to physician's well-being; in addition it has negative impact on healthcare system costs, quality of patient care, and patient satisfaction have also been determined [4]. Numerous studies have suggested possible influencing factors for BOS such as age, gender, working conditions, medical specialty, and even medical professionalism [5-6].

Learning and practicing medical professionalism (MP) is not only a requirement to be competent specialist, but also increases healthcare quality and patient satisfaction, and decreases healthcare cost. Considering cultural values and national healthcare regulations [7], Tehran University of Medical University practices an intra-institutional code of professional conduct based on six major principles; Altruism, Honesty and Integrity, Respect, Responsibility, Justice, and Excellence. It is worthy to note that in 2017, the World Medical Association (WMA) modified the declaration of Geneva and added the clause "I WILL ATTEND TO my own health, well-being, and abilities in order to provide care of the highest standard". Contemplating the prevalence of BOS and its devastating impact, the importance of teaching and practicing medical professionalism (MP), and the necessity to promote self-care and physician's well-being, the rationality to study the interrelations between BOS and MP was established [8]. Studies published by Shanfelt, Chantal et al., Ebrahimi et al., and Brazeau et al. have shed light on this matter, concluding the negative effects of BOS on professionalism, are limited by means of stronger statistical analysis, statistical population and assessment tools for measuring professionalism [9-11]. In other hand there are some studies emphasizes on different other factors like personality and occupation dimensions [12-13]. Therefore

in this study we have tried to overcome these limitations by implementing logistic regression analysis, focusing only the anesthesiology residents, and adopting a new proposed assessment tool for MP evaluation adjusted with accordance to our institute's MP.

## Methods

### Participants and Eligibility Criteria:

This cross-sectional study included all anesthesiology residents, start working in TUMS affiliated hospitals between 2015 to 2018 as full-time permanent staff. Using Google-Forms a web link for an online survey containing the 11-question Demographic Questionnaire (DQ), Maslach Burnout Inventory (MBI), and Self-Conduct Professionalism Questionnaire (SCPQ) were sent via e-mail and social media to TUMS residents. The completed forms were eligible for inclusion if they fulfill the following criteria: 1) Residents whom at least three months had passed from their academic year in 2018. 2) Residents who complete the agreement form to be included in the survey. The forms with missing information or completed late by two months were Excluded from this study.

For all questions related to the study, a direct means of communication via phone, social media accounts or email has been included in addition to declaration on voluntary participation and anonymity and discretion with respect to collected data.

### Instruments:

The demographic questionnaire included multiple choice questions about gender, age, marital status, academic status, residency training hospital, number of monthly shifts, number of monthly weekend shifts, use of analgesics, use of psychiatric medication, and average daily sleep hours.

The MBI, the gold standard for evaluating and BOS diagnosis, is a 7-point Likert scale questionnaire that consists 22-statements evaluating the three subscales of BOS, emotional exhaustion (EE), depersonalization (DP), and personal accomplishment (PA) [13]. We used a translated form (validity and reliability had been proven in previous studies) to obtain more reliable and accurate results [14].

The SCPQ is a 5-point Likert scale questionnaire with 25 statements to measure self-assessed professionalism principles based on TUMS medical professional code of conduct among anesthesiology residents. Each set of questions evaluate one of the six principles. The output of this form was wielded in three distinct manners. First, the Relative-Average-Implementation of each Principle

(RAIP)<sup>1</sup>; Second, the mean score of each principle (MSP)<sup>2</sup>; and third, the number of RAIPs enforced by a resident (NRAIP).

Data collected from the survey was initially evaluated, and were analyzed by linear and binary multivariate regression with STATA V14.0.

## Results

Our final response rate was 90% (99/110), and 44% of anesthesiology residents had MBI scores indicative of BOS. Frequencies of demographic variables and the prevalence of BOS among DQ variables are presented in (Table 1); Mean Scores for Determining RAIPs are shown in (Table 2); (Table 3) demonstrates the prevalence of BOS based on NRAIPs among residents. (Table 4) shows the frequencies for RAIPs and NRAIPs among TUMS anesthesiology residents. Results from multivariate regression are presented in (Table 2) for (BLR) and (Table 3) for OLR.

### Results from Binary Logistic Regression (BLR)

BLR of BOS on variables from the DQ revealed positive relation between age (odds ratio, 0.85 [95% CI 0.76 to 0.95], P=0.004) and training at Shariati hospital (odds ratio, 4.7 [95% CI 1.2 to 17.9], P=0.023) and developing BOS; in addition regressing BOS on RAIPs shows positive relations between implementing altruism (odds ratio, 6.79 [95%CI 1.6 to 28.3], P=0.009) and respect (odds ratio, 4.4 [95% CI 1.3 to 14.8], P=0.017) and being diagnosed with BOS; and negative relations between implementation of justice (odds ratio, 0.25 [95% CI 0.8 to 0.8], P=0.018) and developing BOS (Table 5).

### Results from Ordinary Linear Regression:

Linear regression of burnout subscales on SCPQ scores and demographic variables revealed a direct relationship between emotional exhaustion scores with altruism and Responsibility scores; and an inverse relationship with justice scores and age. Scores from the depersonalization subscale had a direct relationship with regular consumption of analgesics and an inverse relationship with age. A direct relationship was also found between personal accomplishment scores and honesty and integrity scores Table 6. Results regarding regression of RAIPs, DQ variables and BOS are shown in (Table 7).

**Table-1- BOS prevalence in different demographic variables.**

Variables		BOS		Sample of 99	
		Number	Percent (%)	Number	Percent (%)
Hospital	Imam Khomeini Hospital	17	40.5	42	42.4
	Sina Hospital	12	40	30	30.3
	Shariati Hospital	15	55.6	27	27.3
Residency Level	Year 1	9	39.1	23	23.2
	Year 2	13	46.4	28	28.3
	Year 3	13	54.2	24	24.2
	Year 4	9	37.5	24	24.2
Gender	Male	13	34.2	38	38.4
	Female	31	50.8	61	61.6
Marital status	Married	25	44.6	56	56.6
	Single	19	44.2	43	43.4
Child	With Child	10	47.6	21	21.2
	Without Child	34	43.6	78	78.8
Regular Use of psychotropic Medication	Yes	15	60	25	25.3
	No	29	39.2	74	74.7
Regular Use of Analgesics	Yes	10	52.6	19	19.2
	No	34	42.5	80	80.8

**Table 2- Mean (SD) for each Principle to determine RAIPs.**

Professionalism Principles	Mean (SD)
Altruism	9.67 (2.17)
Honesty & Integrity	20.94 (4)
Responsibility	13.36 (2.58)
Justice	5.83 (1.51)
Respect	17.54 (3.18)
Excellence	13.35 (2.62)

<sup>1</sup> For each principle the average score from all participants and each participant was established. If a resident's average score was equal or above the total average, we assumed the resident to implement the principle (RAIP+) in practice, and if it were

below the average, we assumed the resident not to implement the principle (RAIP-)

<sup>2</sup> The mean of total sum of points from statements designated to each principle

**Table 3- The degree of compliance with the individual professionalism by residents and the prevalence of burnout.**

RAIP	Frequencies
Implementation of Altruism	57
Implementation of Honesty & Integrity	60
Implementation of Responsibility	60
Implementation of Justice	58
Implementation of Respect	63
Implementation of Excellence	52
Minimum NRAIP	
Zero Principles	8
One Principle	91
Two Principles	83
Three Principles	70
Four Principles	55
Five Principles	37
Six Principles	14
BOS	44
Total Participants	99

**Table 4- Frequencies of RAIPs and NRAIPs and BOS prevalence.**

Variables		BOS		Sample of 99	
		Number	Percent	Number	Percent
RAIPs	Implementation of Altruism	28	49.1	57	57.6
	Implementation of Honesty & Integrity	25	41.7	60	60.6
	Implementation of Responsibility	28	46.7	60	60.6
	Implementation of Justice	22	37.9	58	58.6
	Implementation of Respect	32	50.8	63	63.6
	Implementation of Excellence	23	44.2	52	52.5
NRAIPs	1 Principle	40	44	91	91.9
	2 Principles	38	45.8	83	83.8
	3 Principles	31	44.3	70	70.7
	4 Principles	27	49.1	55	55.6
	5 Principles	17	45.9	37	37.4
	6 Principles	5	35.7	14	14.1

**Table 5- Results from BLR of BOS on demographic questionnaire and RAIPs.**

Variables	Odds Ratio
<b>RAIP</b>	
Implementation of Altruism	6.788*** (4.943)
Implementation of Honesty & Integrity	0.496 (0.259)
Implementation of Responsibility	0.456 (276)
Implementation of Justice	0.253** (0.147)
Implementation of Respect	4.392** (2.726)
Implementation of Excellence	0.926 (0.531)
Primary Training Hospital	
Sina Hospital	0.689 (0.442)

Shariati Hospital	4.706** (3.209)
Residency Level	
Year 2	2.005 (1.598)
Year 3	4.590* (3.970)
Year 4	2.069 (1.664)
Demographic Variables	
Age (above average)	0.848*** (0.0484)
Married	2.645 (1.573)
Female	1.918 (1.091)
Regular Use of Psychotropic Medication	2.775 (1.741)
Regular Use of Analgesics	1.333 (0.795)
Constant	13.12 (23.65)
Number of Observations	99

\*\*\* p < 0.01 \*\* p < 0.05 \* p < 0.1

**Table 6- Results from linear regression of BOS Score and MBI subscales scores, on principles scores and demographic variables.**

	Variables	Odds Ratio			
		BOS Score	EE Score	DP Score	PA Score
Scores of Each Principle Obtained from the SCPQ	Principle Score				
	Altruism Score	0.685 (0.804)	0.909** (0.412)	0.00508 (0.228)	0.229 (0.363)
	Honesty & Integrity Score	-0.667 (0.498)	-0.341 (0.265)	0.0969 (0.146)	0.422** (0.204)
	Responsibility Score	0.888 (0.838)	0.937** (0.432)	-0.418 (0.277)	-0.369 (0.359)
	Justice Score	-2.231** (0.973)	-1.118** (0.536)	-0.410 (0.274)	0.703* (0.374)
	Respect Score	0.358 (0.784)	0.0569 (0.389)	-0.0216 (0.235)	-0.322 (0.304)
	Excellence Score	-0.565 (0.951)	-0.689 (0.536)	0.313 (0.273)	0.190 (0.387)
	Primary Training Hospital				
	Sina Hospital	-2.469 (2.866)	-0.987 (1.617)	-0.379 (0.846)	1.103 (1.178)
	Shariati Hospital	0.731 (3.346)	2.308 (1.737)	0.268 (0.882)	1.845 (1.426)
Demographic Variables	Residency Level				
	Year 2	-1.714 (3.954)	-1.193 (2.110)	1.273 (1.068)	1.795 (1.538)
	Year 3	0.998 (3.557)	0.248 (1.988)	1.300 (0.976)	0.550 (1.495)
	Year 4	-1.055 (3.515)	0.701 (1.992)	0.607 (0.962)	2.363 (1.485)
	Other Variables				
	Age (above average)	-0.617** (0.277)	-0.334** (0.155)	-0.189*** (0.0710)	0.0937 (0.123)
	Married	2.347 (2.545)	1.470 (1.493)	0.637 (0.708)	-0.240 (1.121)

Female	3.766 (2.827)	1.855 (1.458)	0.510 (0.832)	-1.401 (1.175)
Regular Use of Psychotropics	1.138 (3.176)	0.927 (1.790)	0.306 (0.969)	0.0946 (1.211)
Regular Use of Analgesics	6.021 (4.234)	2.604 (2.399)	2.616*** (0.973)	-0.801 (1.723)
Constant	60.31*** (13.67)	25.23*** (7.168)	10.74*** (3.971)	7.656 (6.056)
Number of Observations	99	99	99	99
	0.250	0.260	0.228	0.220

\*\*\* p &lt; 0.01 \*\* p &lt; 0.05 \* p &lt; 0.1

**Table 7- Results from linear regression of BOS Score and MBI subscales scores, on RAIPs and demographic variables.**

	Variables	Odds Ratio			
		BOS Score	EE Score	DP Score	PA Score
RAIP	<b>Principles</b>				
	Implementation of Altruism	4.451* (2.484)	2.948** (1.307)	1.056 (0.744)	-0.448 (1.134)
	Implementation of Honesty & Integrity	-3.744 (2.726)	-2.256 (1.608)	0.0498 (0.722)	1.538 (1.145)
	Implementation of Responsibility	0.0364 (2.560)	2.135 (1.427)	-1.770** (0.816)	0.328 (1.144)
	Implementation of Justice	-4.601* (2.631)	-2.194 (1.422)	-1.187* (0.689)	1.220 (1.109)
	Implementation of Respect	1.804 (2.615)	2.514* (1.317)	-0.270 (0.720)	0.440 (1.213)
	Implementation of Excellence	-3.658 (2.765)	-1.863 (1.612)	-0.0998 (0.702)	1.696 (1.225)
	Primary Training Hospital				
	Sina Hospital	-3.558 (2.849)	-1.381 (1.680)	-0.686 (0.797)	1.490 (1.170)
	Shariati Hospital	1.781 (3.272)	2.981* (1.584)	0.533 (0.833)	1.732 (1.477)
	Residency Level				
	Year 2	-1.144 (3.867)	-0.342 (2.084)	0.717 (0.962)	1.518 (1.574)
	Year 3	1.037 (3.575)	0.474 (1.906)	1.102 (0.987)	0.538 (1.572)
	Year 4	-1.016 (3.701)	0.967 (2.059)	0.197 (0.916)	2.181 (1.546)
Demographic Variables	Other Variables				
	Age (above average)	-0.642** (0.290)	-0.295* (0.156)	-0.222*** (0.0695)	0.124 (0.129)
	Married	2.705 (2.529)	1.694 (1.488)	0.773 (0.723)	-0.239 (1.137)
	Female	4.420 (2.750)	2.091 (1.457)	0.366 (0.717)	-1.962* (1.178)
	Regular Use of Psychotropics	1.655 (3.250)	1.643 (1.800)	-0.373 (0.942)	-0.385 (1.229)
	Regular Use of Analgesics	5.631 (4.341)	2.435 (2.314)	2.331** (1.033)	-0.865 (1.805)
	Constant	53.75*** (11.41)	21.57*** (5.932)	11.67*** (2.666)	11.49** (4.974)
	Number of Observations	99	99	99	99
		0.248	0.260	0.253	0.211

\*\*\* p &lt; 0.01 \*\* p &lt; 0.05 \* p &lt; 0.1

## Discussion

In order to eliminate confounding factors in this study, we regressed all variables obtained from MBI, DQ, and SCPQ questionnaires; Therefore taking into account results gathered from primary co-relations and our initial hypotheses, via OLS regression our model, the logit of BOS on each professionalism principal score and demographic variables<sup>3</sup>; and via binary regression our model, the logit of BOS on RAIPs and demographic variables<sup>4</sup> showed significant relations.

As mentioned previously a significant positive relation ( $p\text{-value}<0.05$ ) was established between implementing altruism, respect, and training in Shariati hospital, and having BOS. We also established a significant negative relation ( $p\text{-value}<0.01$ ) between having BOS and age and implementing justice in practice.

Our study is among the first to investigate the relationships between TUMS professionalism curriculum, demographic variables, and BOS; therefore data to compare our findings with, are scarce and mostly based on the co-relation of BOS with different variables. One exception is the study of Shenafelt et al. [16] which regressed their findings. In their study developing BOS was shown to have a positive relation with six of the eight unprofessional behaviors evaluated amongst internal medicine residents; in other words, BOS results in unprofessional conduct; however, our findings suggest a positive relation ( $p\text{-value}<0.05$ ) between implicating altruism or implicating respect and having BOS. Before we interpretate this contradiction we must take into account two matters. First, though the questionnaire used in Shenafelt's study was designed to evaluate the quality of patient care (unprofessional behavior), the questions are compatible with at least four of TUMS professionalism principles<sup>5</sup>. Second, as mentioned by Shenafelt their questionnaire is susceptible to social unreliability bias and so was ours. We assume the difference in our findings is due to our perspective to the relationship between BOS and practicing professionalism. Shenafelt concluded that BOS leads to unprofessional behavior; we conclude that the misconduct of professionalism principles (either due to lack of knowing or understanding the principles or lack of the circumstances required to practice them), and implicating these principles in an unprofessional environment (due to unfamiliarity among residents, co-workers, and personnel to professionalism principles and unfamiliarity of patients to their rights and to their care givers responsibilities) will result in an increase chance of developing BOS. Despite the approach we choose to

perceive the relationship between BOS and professionalism, there is no doubt that teaching, implementing and optimal practice of professional principles as a medical skill) not just an ethical requirement) must be enforced; and residents must be informed about BOS as a common occupational disease, its risk factors, complications, and consequences on professionalism [17].

An important finding in our study was the positive significant relation between having BOS and training in Shariati Hospital (a hospital known for its strict discipline and regulations regarding residency programs); significant co-relations between environmental factors and BOS have been mentioned in studies conducted by West et.al. [18] and Sanfilipo et.al [19]. Braseau also established a positive co-relation between MBI scores and professional climate [9]. Though our small sample size and lack of data to measure and compare professional competency among anesthesiology residents in different training hospitals hinders us to fully exploit this finding, it seems that differences in workplace dynamics, daily interactions and routines, and acquaintance with professionalism principles among different hospitals may explain the significance of environmental factors affecting developing BOS.

Age has been shown to have a significant invert relation with having BOS [18-20]; likewise, our findings suggest an invert relation. Maybe effective coping mechanisms acquired from different social and psychological interactions throughout one's life can justify the protective impact of increased age on developing BOS. The implication of this finding is questionable; should an age restriction be required for entering residency programs to prevent the consequences of BOS? Does the age average among residents affect the prevalence of BOS? More data and studies may answer these questions, but for certain, younger residents should be informed and educated for BOS; also taking into account the age average while recruiting residents might show benefit.

The findings obtained from linear regression of MBI subscale scores on SCPQ scores showed interesting relationships; first of all, a positive relationship between emotional exhaustion scores and altruism and responsibility scores, in other words those who scored high in practicing altruism and responsibility also scored high in having emotional exhaustion. Depersonalization scores had a positive relation with taking regular analgesics but a negative relation with age. Finally, personal accomplishment scores had a positive relation with honesty and integrity scores.

<sup>3</sup> Smoking was excluded from the model, due to insufficient observations, number of night shifts and number of weekend shifts were also omitted due to co-linearity with residency level.

<sup>4</sup> Smoking, number of monthly night shifts, and weekend shifts were excluded from the model, due to the same reasons mentioned for the OLS model

<sup>5</sup> Except for justice and excellence



A highlight in our study is the fact that residents who scored high in the MBI emotional exhaustion (EE) subscale also scored high in self-assumed practice of altruism and responsibility. This brings up an interesting skepticism; can Implementing altruism and or responsibility in medical practice result in BOS? In order to answer such dubiety, we must call upon a few reminders; First, all the instruments utilized to gather data for this study were dependent on the honesty of the volunteering medical resident participating in the study. Second, this finding is the result of regressing many variables, therefore the pure effect of each variable on emotional exhaustion has been concluded. Finally, we must remind that to our opinion the perspective contemplated in professionalism is not merely a set of ethical and behavioral “musts” and “must nots”, but rather a set of medical skills which are expected from health providers to imply during their routine practice and daily interactions; implementing a medical skill not only requires knowledge, but also requires a standard infrastructure and understanding how, when, and where to use that skill; therefor, the positive relationship between higher EE scores and higher altruism and responsibility scores may be due to two possibilities; first, lack of a professional infrastructure in the workplace rendering professional behavior to undesired outcomes. A second possibility is that anesthesiology residents have not fully appreciated the skills and do not know how, when, and where to use it; in simple terms “they’re not using them right”.

the positive relation between depersonalization scores and taking regular analgesic medication may be explained by the fact that chronic pain necessitating medical treatment may affect one’s ability to perceive and interact with a patient in a normal manner; though an interesting finding, detailed data regarding the indication and type of analgesics were not obtained; therefore, interpretation of this finding requires further study. On the other hand, we established a negative relation between depersonalization scores and age; meaning higher ages scored lower on DP questions. This finding is consistent with our previous mentioned finding and could explain why higher ages were less likely to develop BOS.

Personal accomplishment scores (a protective factor against BOS) were also shown to have a positive relation with honesty and integrity scores, a finding in ordinance with studies suggesting a negative relation between BOS and professional misconduct [9, 15, 20]. In other words, lower honesty and integrity scores (professional misconduct) were associated with lower PA scores (increased possibility of BOS).

Brazeau’s study concluded a negative correlation between empathy scores<sup>6</sup> and BOS scores; similarly,

Shanafelt’s study revealed an inverse relation between examples of professional conduct and increased DP subscale scores [10, 16]. The study conducted by Dyrbye et al reported the possibility of negative effects of BOS on professionalism [18]. Ebrahimi et al also concluded a negative correlation between a medical professionalism questionnaire based on AIBM principles and MBI scores [15].

In Sousa et al. study, conducted by reviewing articles and aiming of investigating burnout in the field of anaesthesia, it was stated that the relationship between burnout and age has been reported differently in different studies, such that during training at a younger age and during the post-residency period, it is more common in older people. From this point of view, the inverse correlation resulting from our research is consistent with Sousa et al. findings in the sense that job burnout decreases with increasing age during residency. This finding is consistent with the findings of Sousa et al. and Sanfilippo et al. findings [21-22], but it is against the findings of Dyrbye et al. and Sephermanesh et al. findings [18, 23].

The fact that our study revealed a positive relationship between professional conduct<sup>7</sup> and developing BOS can be justified by the differences in the tools, study sample, and perspective in interpreting our data; though solely relying on the honesty and compliance of the residents included in our study is an issue, the many similarities among our findings and previous studies is reassuring.

#### **Study Limitations:**

Limitations in our study design include cross-sectional nature, sample size, and lack of cooperation in completing the forms; but worthy of notice is the method of statistical analysis implemented in our study which showed repetitive results similar with other studies.

#### **Conclusion**

Based on our findings the most important demographic factors affecting the chances of developing BOS among anesthesiology residents are age and training hospital; incompetence in performing the necessary professional skills required for an anesthesiology resident training is associated with increased likelihood of developing BOS among them. In order to avoid the consequences of errors in these skills, such as BOS, measures should be taken to highlight the importance of teaching the correct application of professional skills and to provide a professional environment in the workplace.

<sup>6</sup> Empathy scores in Brazeau’s study was assumed to be an alternative for altruism scores in our study

<sup>7</sup> Assumed to be examples of altruism, respect, honesty and integrity and conscientiousness



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