Original Article

Levels of Burnout and Their Associated Factors among Physicians Working in Northeast Anatolia

Z Kosan, EO Calikoglu, A Guraksin

Department of Public Health, Ataturk University, Erzurum, Turkey

Abstract

Context: The concept of burnout is a condition seen in occupational groups working face-to-face with people and resulting in emotional exhaustion, depersonalization, and low professional productivity. **Aims:** The purpose of this study was to determine burnout levels and associated factors in physicians practicing in Erzurum, Northeast Anatolia, Turkey. **Settings and Design:** This research was designed as a cross-sectional descriptive study. The research sample size was calculated at 663 participants with a 99% confidence interval and a 3% margin of error using Epi Info software. A 10% incomplete or nonresponse rate was added, for a target cohort of 730 individuals. Seven hundred and eleven physicians agreeing to take part were enrolled. **Subjects and Methods:** A questionnaire consisting of questions concerning sociodemographic characteristics and the Maslach Burnout Inventory (MBI) was used as the data collection tool. The questionnaires were distributed by the authors and completed by the physicians in person. **Statistical Analysis:** Descriptive data were expressed as percentage, mean, median, and standard deviation. Data were analyzed using the Kruskal–Wallis and Mann–Whitney U tests and binary logistic regression analysis. $P < 0.05$ was regarded as statistically significant. Statistical analyses were performed on SPSS 15.00 software. **Results:** The mean age of the physicians in the study was 34.4 ± 7.7 years. Mean MBI subdimension scores were 15.6 ± 7.0 for emotional exhaustion, 5.7 ± 3.9 for depersonalization, and 21.0 ± 4.4 for personal accomplishment. Mean emotional exhaustion and depersonalization scores were significantly higher and personal accomplishment scores significantly lower in physicians aged under 25, not taking vacations, working in public hospitals, who were working as research assistants. **Conclusions:** Burnout levels among the participants were low (emotional exhaustion in 75%, depersonalization in 76.2%, and low personal accomplishment in 69.6%).

Keywords: *Burnout, Maslach Burnout Inventory, occupational stress, physicians*

Date of Acceptance:
23-Jan-2018

Introduction

The concept of burnout was first described by Freudenberger in 1974 as a condition seen in occupational groups working in difficult situations face-to-face with other people and characterized by fatigue, disappointment, and resignation from the job.[1] Maslach described burnout as a working individual abandoning the specific significance and purpose of the job and no longer taking an interest in the people served.[2] The characteristic distinguishing burnout from reactions deriving from sources of organizational stress is that it emerges as a result of interactions with individuals encountered due to participants' work.[3]

Three subdimensions of burnout syndrome have been described emotional exhaustion, depersonalization, and personal accomplishment. Emotional exhaustion refers to

Access this article online

Quick Response Code:

Website: www.njcponline.com

DOI: 10.4103/njcp.njcp_298_17

Address for correspondence: Dr. Z Kosan, Department of Public Health, Ataturk University, Aziziye, Erzurum, Turkey.
E-mail: zahidekosan@gmail.com

How to cite this article: Kosan Z, Calikoglu EO, Guraksin A. Levels of burnout and their associated factors among physicians working in Northeast Anatolia. Niger J Clin Pract 2018;21:875-81.

feeling emotionally overloaded and exhaustion because of one's work.[2]

Depersonalization refers to the display of attitudes and behaviors in a manner lacking any emotion and without considering that the people whom one serves are also individuals.[2]

Personal accomplishment is defined as feelings of adequacy and success in one's work.[2]

A greater risk of burnout has been determined in professions involving face-to-face contact with other people.[1] The tension deriving from working with many patients during the day and afterward the responsibility for taking critical decisions, the serious consequences of those decisions, and the pressure to avoid errors are some of the occupational conditions inherent in the nature of medicine.[4] Moreover, burnout among physicians has been determined to be more widespread than among other workers.[5] The findings of recent studies show that burnout has an adverse impact on professionalism, reduces the quality of care, increases the risk of medical errors, impairs patient satisfaction, and encourages early retirement.[6-11]

Problems arising due to both imbalances in health personnel distribution between urban and rural areas in our region and to deficiencies in the working environment can create dissatisfaction among physicians. Decreased professional satisfaction and productivity among physicians whose expectations have to a large extent not been met will have consequences that are directly reflected in the community, a vicious circle that will continue to worsen. No wide-ranging studies have previously investigated burnout levels in physicians in our region. The purpose of this study was to determine burnout levels and associated factors in physicians practicing in Erzurum, Northeast Anatolia, Turkey.

Subjects and Methods

This cross-sectional study was performed to determine burnout levels and associated factors in physicians in the province of Erzurum between January 1 and December 31, 2008. The study population consisted of all physicians actively working in Erzurum, a total of 1166 individuals. The research sample was calculated at 663 participants with a 99% confidence interval and a 3% margin of error (a reference prevalence of burnout of 30% being adopted[12]) using Epi Info[13] software (Epi Info, Georgia, USA). A 10% incomplete or nonresponse rate was added, for a target cohort of 730 individuals. Seven hundred and eleven physicians agreeing to take part were finally enrolled.

The questionnaire used as the data collection tool consisted of two main sections. The first was an information section consisting of 34 questions intended to determine the sociodemographic characteristics of the participating physicians. These questions inquired into personal, professional, and career characteristics. The second section consisted of the Maslach Burnout Inventory (MBI). The MBI was developed by Maslach and Jackson.[14] The validity and reliability of the Turkish language version of the scale adapted for health personnel were established by Ergin.[15] The MBI is a five-point Likert-type inventory on a scale from "never" to "always," consisting of emotional exhaustion (9 items), depersonalization (5 items), and personal accomplishment (8 items) subdimensions. Each item is scored between 0 and 4, and scores are calculated separately for each subdimension. High emotional exhaustion and depersonalization scores and low personal accomplishment scores indicate a high level of burnout. The data obtained were analyzed based on the burnout subdimension value ranges used in Ergin's study, and each subdimension was evaluated at three levels, low, moderate, and high.[15] Scores for emotional exhaustion were evaluated as ≤20 low, 21–27 moderate, and ≥28 high; in terms of depersonalization, scores ≤8 were evaluated as low, 9–12 as moderate, and ≥13 as high, while for personal accomplishment, scores ≤23 were evaluated as low, 24–27 as moderate, and ≥28 as high.

Statistical analysis was performed on SPSS 15.00 software (SPSS, Chicago, IL). Descriptive data were expressed as percentage, mean, median, and standard deviation, and compatibility with normal distribution was calculated using the Kolmogorov–Smirnov test. The Kruskal–Wallis and Mann–Whitney U-tests were used for data analysis. Since there are no cutoff values for presence or absence, scores for emotional exhaustion, depersonalization, and personal accomplishment were divided into relevant halves on the basis of the median value for each subdimension. $P < 0.05$ was regarded as statistically significant.

The questionnaires were distributed to the participants and collected by the authors after completion. Consent forms were received from all physicians agreeing to take part.

Approval was received from the Atatürk University Medical Faculty Clinical Research Ethical Committee (no. 9 dated 09.02.2007) before the study began. The research was conducted in line with ethical principles.

Results

The mean age of the participating physicians was 34.4 ± 7.7 years. Sixty-five percent were male, and 72.9% were married. In addition, 19.0% reported playing sports regularly, 52.3% go on vacation every year, and 29.5% smoked [Table 1].

Table 1: Distribution of various sociodemographic and occupational characteristics of physicians

Characteristic	*n*	%
Age group (*n*=711)		
<25	37	5.2
25-34	374	52.6
35-44	219	30.8
45-55	68	9.6
>55	13	1.8
Mean: 34.4±7.7 median: 32	Min. value: 24	Max. value: 63
Sex (*n*=711)		
Male	462	65.0
Female	249	35.0
Sporting activity (*n*=711)		
Yes	135	19.0
No	576	81.0
Vacation status (*n*=711)		
Every year	372	52.3
Occasionally	221	31.1
None	118	16.6
Night shifts (*n*=711)		
Yes	406	57.1
No	305	42.9

Of the physicians in this study, 51.8% worked in institutions affiliated to the Ministry of Health, 44.8% in university hospitals, and 3.4% in private health institutions. The mean length of professional service was 9.9 ± 7.7 years. In career terms, 29.1% were general practitioners, 47.8% of the career physicians worked in internal medical sciences, and 9.9% in basic medical sciences. In addition, 57.1% of physicians worked night shifts, with 43.7% of these working 6 or more a month [Table 1].

In addition, 85.2% of physicians stated that they had selected the profession of their own accord while 32.3% were satisfied with their working environment and 68.4% were dissatisfied with the physical conditions in their institutions.

In terms of MBI subdimensions, the mean emotional exhaustion score was 15.6 ± 7.0, the mean depersonalization score was 5.7 ± 3.9, and the mean personal accomplishment score was 21.0 ± 4.4.

The mean emotional exhaustion score was high in 5.3% of physicians and the mean depersonalization

Table 2: Relations between various personal characteristics of physicians and burnout scores

Category	MBI-EE		MBI-D		MBI-PA	
	Median	Mean Rank	Median	Mean Rank	Median	Mean Rank
Age group (*n*=711)						
Under 25	15.0	388.3	6.0	393.0[b]	18.0	226.9[e,f,g]
25-34	16.0	383.7[a]	6.0	396.8[c,d]	21.0	325.0[h]
35-44	15.0	386.4	4.0	312.4[d]	22.0	392.9[e,h,i,j]
45-55	11.5	274.1[a]	3.0	272.4[b,c]	23.0	447.1[f,i]
55 or more	9.0	224.6	3.0	246.6	24.0	515.2[g,j]
	KW=25.9, *P*<0.001		KW=40.9, *P*<0.001		KW=51.6, *P*<0.001	
Sex (*n*=711)						
Male	15.0	352.8	6.0	362.0	22.0	379.9
Female	15.0	361.8	5.0	344.8	21.0	311.6
	U=50600.5, *P*>0.05		U=49623.0, *P*>0.05		U=41518.0, *P*<0.001	
Sporting activities (*n*=711)						
Yes	15.0	319.7	6.0	346.7	22.0	366.5
No	15.0	364.4	5.0	358.1	21.0	353.5
	U=33991.5, *P*=0.02		U=37627.5, *P*>0.05		U=37452.0, *P*>0.05	
Specialty (*n*=504)						
Basic Medical Sciences	9.5	136.5[a,b]	3.0	158.7[c,d]	23.0	267.1
Surgical Medical Sciences	16.0	264.2[a]	6.0	276.3[c]	22.0	264.6
Internal Medical Sciences	16.0	266.1[b]	5.0	250.9[d]	21.0	238.7
	KW=35.2, *P*<0.001		KW=26.5, *P*<0.001		KW=4.1, *P*>0.05	
Satisfied with working environment (*n*=711)						
Yes	11.0	228.6[a,b]	4.0	274.8[d,f]	23.0	411.2[g,h]
Partly	17.0	380.6[a,c]	6.0	367.7[d,e]	21.0	352.9[g,i]
No	22.0	532.3[b,c]	8.0	480.7[e,f]	19.0	255.3[h,i]
	KW=178.7, *P*<0.001		KW=80.6, *P*<0.001		KW=44.5, *P*<0.001	

MBI-EE: Maslach Burnout Inventory-Emotional Exhaustion, MBI-D: Maslach Burnout Inventory-Depersonalization, MBI-PA: Maslach Burnout Inventory-Personal Accomplishment, KW: Kruskal Wallis Test, U: Mann Whitney U Test, a,b,c,d,e,f,g,h,i: There is a significant difference between the groups with the same letter uppercase in the corresponding table

Table 3: Binary logistic regression analysis results for various personal variables by the dimension of physician's emotional burnout

Category	OR (95% CI)	*P*
Vacation status		
Every year	1.00 (reference)	
Occasionally	1.09 (0.76-1.56)	>0.05
Never	3.11 (1.89-5.11)	<0.001
Smoking status		
Nonsmoker	1.00 (reference)	
Smoker	1.42 (1.01-1.99)	0.03
Satisfied with working environment		
Yes	1.00 (reference)	
Partly	2.34 (1.51-3.64)	<0.001
No	5.89 (2.94-11.79)	<0.001
Physical conditions in the workplace		
Adequate	1.00 (reference)	
Inadequate	1.57 (1.06-2.33)	0.02

OR=Odds ratio; CI=Confidence interval

Table 4: Binary logistic regression analysis results for various personal variables by the dimension of physicians' depersonalization

Category	OR (95% CI)	*P*
Total professional experience		
18 years or more	1.00 (reference)	
6 years or less	2.10 (1.24-3.55)	<0.001
7-10 years	1.57 (0.87-2.84)	>0.05
11-17 years	1.34 (0.76-2.35)	>0.05
Night shifts		
No	1.00 (reference)	
Yes	1.41 (1.004-1.996)	0.04
Satisfied with working environment		
Yes	1.00 (reference)	
Partly	1.96 (1.25-3.09)	<0.001
No	2.76 (1.46-5.23)	<0.001
Physical conditions in the workplace		
Adequate	1.00 (reference)	
Inadequate	1.62 (1.09-2.40)	0.01

OR=Odds ratio; CI: Confidence interval

score was high in 5.4% while the mean personal accomplishment score was low in 69.9%.

Statistically significant associations were determined between participating physicians' age groups, vacation habits, smoking status, institutions worked, total time in the profession, shift working status, career field, satisfaction with working environment, and perception of physical conditions as satisfactory and mean emotional exhaustion and depersonalization scores. Mean emotional exhaustion and depersonalization were significantly higher among physicians aged under 25 ($P < 0.001$), not taking vacations ($P < 0.001$), smokers ($P > 0.05$), those working in public hospitals ($P < 0.001$), with 6 years or less professional experience ($P < 0.001$), not selecting the profession of their own accord ($P < 0.001$), working six night shifts or more ($P < 0.001$), working as research assistants ($P < 0.001$), dissatisfied with their working environments ($P < 0.001$), or perceiving their physical conditions as inadequate ($P < 0.001$) [Table 2].

Statistically significant associations were determined between mean personal accomplishment scores and participating physicians' age groups, vacation habits, institutions worked, career field, satisfaction with working environment, and perception of physical conditions as satisfactory. Mean personal accomplishment scores were significantly lower among physicians aged under 25 ($P < 0.001$), not taking vacations ($P < 0.001$), working in public and university hospitals ($P < 0.001$), with 6 years or less professional experience ($P < 0.001$), working as research assistants ($P < 0.001$), not selecting the profession of their own accord ($P < 0.001$), dissatisfied with their working environments ($P < 0.001$), and perceiving their physical conditions as inadequate ($P < 0.001$) [Table 2].

The difference between the sexes in terms of mean emotional exhaustion and depersonalization scores was not significant ($P > 0.05$). However, male physicians' personal accomplishment scores were significantly higher than those of females ($P < 0.001$) [Table 2].

The emotional exhaustion scores of physicians engaging in sports were significantly lower than those of nonsporting physicians ($P > 0.05$) while no significant difference was observed in depersonalization and personal accomplishment scores [Table 2].

Mean emotional exhaustion scores were higher in physicians working in internal medicine, and mean depersonalization scores were higher in physicians working in surgical medical sciences ($P < 0.001$). Although mean personal accomplishment scores were higher in patients working in basic medical sciences, the difference was not statistically significant ($P > 0.05$) [Table 2].

In the binary logistic regression model, not taking vacations increased the risk of emotional exhaustion 3.11-fold (odds ratio [OR] =3.11, 95% = 1.89–5.11), smoking increased the risk 1.42-fold (OR = 1.42, 95% = 1.01–1.99), working as a research assistant 3.73-fold (OR = 3.73, 95% =1.60–8.66), dissatisfaction with the working environment 5.89-fold (OR = 5.89, 95% =2.94–11.79), and perceiving physical conditions in the workplace as inadequate increased the risk 1.57-fold (OR = 1.57, 95% =1.06–2.33) [Table 3]. Total length of professional experience of 6 years

Table 5: Binary logistic regression analysis results for various personal variables by the dimension of physicians' personal accomplishment

Category	OR (95% CI)	*P*
Sex		
Female	1.00 (reference)	
Male	1.94 (1.28-2.94)	<0.001
Total professional experience		
6 years or less	1.00 (reference)	
7-10 years	1.25 (0.81-1.93)	>0.05
11-17 years	1.64 (1.10-2.44)	0.01
18 years or more	3.02 (1.82-5.00)	<0.001
Physical conditions in the workplace		
Inadequate	1.00 (reference)	
Adequate	1.64 (1.14-2.36)	<0.001

OR=Odds ratio; CI=Confidence interval

or less increased the risk of depersonalization 2.10-fold (OR = 2.10, 95% =1.24–3.55), working as a research assistant increased the risk 4.99-fold (OR = 4.99, 95% CI = 2.05–12.14), working night shifts 1.41-fold (OR = 1.41, 95% =1.004–1.996), dissatisfaction with the working environment 2.76-fold (OR = 2.76, 95% CI = 1.46–5.23), and perceiving physical conditions in the workplace as inadequate increased the risk 1.62-fold (OR = 1.62, 95% CI = 1.09–2.40) [Table 4]. Male gender increased personal accomplishment 1.94-fold (OR = 1.94, 95% CI = 1.28–2.94), total professional experience of 18 years or more increased the risk 3.02-fold (OR = 3.02, 95% CI = 1.82–5.00), and perceiving physical conditions in the workplace as inadequate increased the risk 1.64-fold (OR = 1.64, 95% CI = 1.14–2.36) [Table 5].

Discussion

Mean burnout scores were at a low level in this study intended to determine burnout levels and associated factors in physicians working in health institutions in the province of Erzurum. Our findings are similar to those of other studies involving physicians in various parts of Turkey.[12,16,17] Mean burnout scores in Ergin's "Maslach Burnout Inventory Turkey Health Personnel Norms" were higher than those in our study.[15] This may be due to Ergin's study also including nonphysician health workers.

Emotional exhaustion scores were highest in physicians aged under 25, and mean personal accomplishment scores were higher in older physicians. These findings are compatible with the previous literature.[16,18-21] This may be attributed to physicians' professional experience increasing with age, the development of independent decision-making skills, and possession of status bestowing satisfaction.

While no difference was determined between the sexes in terms of mean emotional exhaustion and depersonalization scores, male physicians' personal accomplishment scores were approximately twice as high as those of female physicians.[15] Women's greater responsibilities in their lives outside work may explain their lower personal accomplishment levels. Similar findings in terms of gender have been reported in the literature.[19,22,23] One review of 67 studies of burnout among assistant physicians reported that sex is not a determining factor in burnout.[24] It is difficult to find any definite statement regarding the effect of the gender variable in burnout on the part of Maslach *et al*.[25]

The emotional exhaustion scores of sports-playing physicians were significantly low. Similar results have been reported in Turkish and international studies.[21,26] Interventional studies have reported that doing sports, alone or in groups, physical activity and tension exercises reduce burnout and job stress.[27] Sport is one recommended means of coping with emotional exhaustion.

The risk of emotional exhaustion in our study was three times higher in participants who did not take vacations compared to those who did. Aras's study from our region reported a similar risk of personal and emotional exhaustion to that in our study.[28] International studies also support this view. Studies have determined that physicians who go on vacation experience less burnout and that physicians' exhaustion levels decrease after vacations.[21,29]

Smoking physicians experienced significantly greater emotional exhaustion and depersonalization than nonsmokers. Cecil *et al*. reported greater emotional exhaustion in smokers in their study of medical faculty students.[30] This may be due to health personnel working under intense stress regarding smoking as a solution to this.

The institutions with the highest mean emotional exhaustion and depersonalization scores in our study were public hospitals while private hospitals exhibited the highest personal accomplishment scores. Özyurt's results were similar to our own findings; physicians working in public and university hospitals had higher emotional exhaustion and depersonalization scores and lower personal accomplishment scores compared to those in a private hospital.[12] Studies involving physicians working in various specialties overseas have also determined higher burnout levels in physicians working in public hospitals compared to colleagues in private hospitals.[31,32] Working in private hospitals is known to provide a very good income. Lack of institutional

deficiencies, the meeting of expectations, and patients having higher socioeconomic levels may result in less burnout being experienced. The intensive workload of public hospital personnel and the heavy burden imposed by bureaucratic procedures are significant factors triggering burnout.

In terms of total working time in the profession, physicians with 6 years or less experience had high mean emotional exhaustion scores and low personal accomplishment scores. According to the Edelwich model, entering a profession with great hopes which are subsequently not met at the expected level gradually leads to burnout.[33] Higher levels of burnout have been reported in inexperienced individuals and those who had newly entered the profession compared to more experienced individuals.[17]

The personal accomplishment scores of physicians working night shifts and of physicians working six night shifts or more a month decreased while emotional exhaustion and depersonalization scores increased. It may be concluded that burnout levels increase for reasons such as the excessive workload when working night shifts, assuming sole responsibility for patients, the lack of a period of leave on the following day, and sleeplessness. Previous studies concur with our findings, with studies of health personnel and physicians determining that the number of night shifts increases burnout in an independent manner.[20,34-36]

Our results showed lower emotional exhaustion and depersonalization and higher personal accomplishment scores among those who selected the profession of their own accord. Various studies from Turkey have shown that physicians who report entering the profession from their own choice experience less burnout.[12,37]

Research assistants in our study had higher emotional exhaustion and depersonalization scores compared to other career alternatives. The high burnout levels of research assistants may be due to reasons such as their being new to the profession, young and inexperienced, to difficulties in adapting to the profession, and to their heavy workload and numerous night shifts. The findings of previous studies are compatible with our own results.[12,16,18,38]

The mean emotional exhaustion and depersonalization scores of individuals who were dissatisfied with their working environment were significantly higher, and their personal accomplishment scores significantly lower, than those of the physicians who were content with their conditions. Physicians who are dissatisfied with their working conditions exhibiting greater depersonalization and emotional burnout may be due to discontent with those conditions, conflicts, feelings of tension, being in a stressful environment, and an inability to work in a peaceful state of mind. The conclusions of Aras's study of primary physicians in our province are similar to our own.[28] Studies from Turkey have shown that satisfaction affects all three subdimensions of burnout.[39,40] Studies from different countries involving health personnel and physician have shown that satisfaction with the working environment affects burnout levels and patient care outcomes.[34,41,42] Maslach and Jackson reported an association between working environment and burnout.[22]

Physicians who perceive their physical conditions as adequate are reported to experience less burnout and regarding those conditions as adequate is thought to raise satisfaction levels. The findings are compatible with the literature.[12,38,43]

According to our own and previous findings, physicians who are young and new to their professional lives experience higher levels of burnout. Precautions against burnout should, therefore, be taken while trainee doctors are still studying in medical faculties. At the same time, since burnout levels are lower among physicians who choose the profession of their own accord, the requisite importance needs to be attached to preuniversity counseling services. Arrangements must be made to allow personnel to take vacations, and salary deductions must be reduced to a minimum to alleviate financial concerns over taking annual leave. Personnel must be encouraged to engage in sports, and training sessions should be arranged. Group activities should also be arranged outside working hours to encourage sports participation rates. Since the working environment and physical conditions affect the mood and productivity of all workers, joint decisions must be taken in which all staffs have a voice, and measures must be taken, depending on the means available, to improve the working environment.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

References

1. Freudenberger HJ. Burnout: Past, present, and future concerns. Loss Grief Care 1989;3:1-10.
2. Maslach C, Jackson SE. The measurement of experienced burnout. J Organ Behav 1981;2:99-113.
3. Sturgess J, Poulsen A. The prevalence of burnout in occupational therapists. Occup Ther Ment Health 1983;3:47-60.
4. Maslach C, Jackson SE. Burnout in health professions: a social psychological analysis. In: Sanders GS, Suls J, eds. Social Psychology of Health and Illness. Hillsdale, NJ: Lawrence Erlbaum Associates; 1982:227.
5. Shanafelt TD, Boone S, Tan L, Dyrbye LN, Sotile W, Satele D,

et al. Burnout and satisfaction with work-life balance among US physicians relative to the general US population. Arch Intern Med 2012;172:1377-85.
6. Wallace JE, Lemaire JB, Ghali WA. Physician wellness: A missing quality indicator. Lancet 2009;374:1714-21.
7. Dyrbye LN, Massie FS Jr., Eacker A, Harper W, Power D, Durning SJ, *et al.* Relationship between burnout and professional conduct and attitudes among US medical students. JAMA 2010;304:1173-80.
8. Shanafelt TD, Balch CM, Bechamps G, Russell T, Dyrbye L, Satele D, *et al.* Burnout and medical errors among American surgeons. Ann Surg 2010;251:995-1000.
9. Shanafelt T, Sloan J, Satele D, Balch C. Why do surgeons consider leaving practice? J Am Coll Surg 2011;212:421-2.
10. Halbesleben JR, Rathert C. Linking physician burnout and patient outcomes: Exploring the dyadic relationship between physicians and patients. Health Care Manage Rev 2008;33:29-39.
11. Argentero P, Dell'Olivo B, Ferretti MS. Staff burnout and patient satisfaction with the quality of dialysis care. Am J Kidney Dis 2008;51:80-92.
12. Ozyurt A, Hayran O, Sur H. Predictors of burnout and job satisfaction among Turkish physicians. QJM 2006;99:161-9.
13. Dean AG, Dean JA, Coulombier D, Brendel KA, Smith DC, Burton AH, *et al*. Epi Info, Version 6: A Word Processing, Database, and Statistics Program for Public Health on IBM Compatible Microcomputers. Centers For Disease Control and Prevention, Atlanta, Georgia, U.S.A., 1996.
14. Maslach C, Jackson S, Leiter MP Maslach Burnout Inventory, Ed 3. Palo Alto, CA, Consulting Psychologists Press, Inc, 1997:191-218.
15. Ergin C. Adoption of Maslach Burnout Inventory in doctors and nurses. 7th National Psychology Congress Scientific Studies 1992;22:25.
16. Sayil I, Haran S, Ölmez Ş, Özgüven HD. Burn-Out İn Medical Doctors and Nurses of Ankara University Medical School. Kriz Derg 1997;5:71 7.
17. Aslan D, Kiper N, Karaağaoğlu E, Topal F, Güdük M, Cengiz Ö. Burnout Syndrome and Affecting Factors in a Group of Physicians Registered Turkish Medical Association. Ankara: Turkish Medical Association Publications 2005. p. 14.
18. Ersoy F, Yıldırım R, Edirne T. Burnout Syndrome. Turkish Medical Association Sürekli Tıp Eğitimi Dergisi; 2001. Available from: http://www.ttb.org.tr/STED/ sted0201/1html. [Last accessed on 2013 Jun 25].
19. Kaçmaz N. Burnout Syndrome. J Ist Faculty Med 2005;68:29-32.
20. Shanafelt TD, Balch CM, Bechamps GJ, Russell T, Dyrbye L, Satele D, *et al.* Burnout and career satisfaction among American surgeons. Ann Surg 2009;250:463-71.
21. Peckham C. Physician burnout: It just keeps getting worse; 2015. Available from: www.medscape.com/viewarticle/838437. [Last accessed on 2017 Nov 10].
22. Maslach C, Jackson SE. The role of sex and family variables in burnout. Sex Roles 1985;12:837-51.
23. Cherniss C. Professional Burnout in Human Service Organizations. Newyork: Praeger Publishers; 1980.
24. Thomas NK. Resident burnout. JAMA 2004;292:2880-9.
25. Maslach C, Schaufeli WB, Leiter MP. Job burnout. Annu Rev Psychol 2001;52:397-422.
26. Olson SM, Odo NU, Duran AM, Pereira AG, Mandel JH. Burnout and physical activity in Minnesota internal medicine resident physicians. J Grad Med Educ 2014;6:669-74.
27. Romani M, Ashkar K. Burnout among physicians. Libyan J Med 2014;9:23556.
28. Aras A. Level of Job Satisfaction with Burnout Syndrome and Associated Factors of Physicians in Primary Health Care Institutions. Erzurum: Atatürk University; 2012.
29. Etzion D. Annual vacation: Duration of relief from job stressors and burnout. Anxiety Stress Coping 2003;16:213-26.
30. Cecil J, McHale C, Hart J, Laidlaw A. Behaviour and burnout in medical students. Med Educ Online 2014;19:25209.
31. Lim RC, Pinto C. Work stress, satisfaction and burnout in New Zealand radiologists: Comparison of public hospital and private practice in New Zealand. J Med Imaging Radiat Oncol 2009;53:194-9.
32. Böhle A, Baumgärtel M, Götz ML, Müller EH, Jocham D. Burn-out of urologists in the county of Schleswig-Holstein, Germany: A comparison of hospital and private practice urologists. J Urol 2001;165:1158-61.
33. Edelwich J, Brodsky A. Burn-out: Stages of Disillusionment in the Helping Professions. New York: Human Sciences Press; 1980.
34. Embriaco N, Azoulay E, Barrau K, Kentish N, Pochard F, Loundou A, *et al.* High level of burnout in intensivists: Prevalence and associated factors. Am J Respir Crit Care Med 2007;175:686-92.
35. Embriaco N, Papazian L, Kentish-Barnes N, Pochard F, Azoulay E. Burnout syndrome among critical care healthcare workers. Curr Opin Crit Care 2007;13:482-8.
36. Goldberg R, Boss RW, Chan L, Goldberg J, Mallon WK, Moradzadeh D, *et al.* Burnout and its correlates in emergency physicians: Four years' experience with a wellness booth. Acad Emerg Med 1996;3:1156-64.
37. Bilici M, Mete F, Soylu C, Bekaroğlu M, Kayakçı Ö. The Levels of Burnout and Depression in a Group of Academicians. Turkish Journal of Psychiatry 1998;9:181-90.
38. Yaman H, Ungan M. Burnout in Young Physicians: A Study on Family Medicine Residents. Turkish Journal of Psychology 2002;17:37-44.
39. Yaman H, Ungan M. Burnout in Young Physicians: A Study on Family Medicine Residents. Turkish Journal of Psychology 2002;17:37-44.
40. Çam, O. Investigation of Validity and Reliability of Burnout Inventory. 7th National Psychology Congress Scientific Studies Handbook. Ankara: Psychological Association Publications 1992: 155-66.
41. Imai H, Nakao H, Tsuchiya M, Kuroda Y, Katoh T. Burnout and work environments of public health nurses involved in mental health care. Occup Environ Med 2004;61:764-8.
42. Spence Laschinger HK, Leiter MP. The impact of nursing work environments on patient safety outcomes: The mediating role of burnout/engagement. J Nurs Adm 2006;36:259-67.
43. Yavuzyilmaz A, Topbaş M, Çan E, Çan G, Özgün Ş. Burnout Syndrome, Job Satisfaction Levels And Related Factors In Central Trabzon Province Primary Health Center Workers. TAF Prev Med Bull 2007;6:1.