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Original Article

Assessing Burnout Status and its Association With Demographic and Job-Related Factors Among General Dentists During the COVID-19 Pandemic in Shiraz

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Abstract

Background and aims: The aim of the current study was to assess the construct validity of the Persian version of the Maslach Burnout Inventory-Human Services Survey (MBI-HSS) among dentists and burnout rate and its related factors among general dentists in Shiraz during the coronavirus disease-19 (COVID-19) pandemic.

Methods: This cross-sectional study was performed among 385 general dentists in Shiraz. Multiple stage sampling was performed for sample selection. In addition to a questionnaire containing demographic and job-related characteristics, the burnout rate was assessed using the MBI-HSS. The MBI-HSS consists of emotional exhaustion (EE), depersonalization (DP), and personal accomplishment (PA) dimensions. The Pearson correlation coefficient, independent t-test, and multiple regression analysis were applied for statistical analysis. Finally, confirmatory factor analysis (CFA) was used to test the model's fitness.

Results: A total of 385 dentists participated in the study, including 213 (55.3%) males and 172 (44.7%) females with a mean age of 32.89 (±6.29) years. The mean years of activity, the number of patients per week, and working hours per week were 9.15 years, 31.55 patients, and 39.50 hours, respectively. Most dentists showed low to moderate burnout in terms of EE (86%) and moderate to high burnout with regard to DP (90.9%) and PA (96.6%). Regarding the association between demographic factors and burnout dimensions, EE had a significant association with gender (B=0.26, $P<0.001$), age (B=-0.04, $P=0.044$), marital status (B=-0.42, $P<0.001$), and years of practice (B=-0.26, $P<0.001$). Further, DP was significantly associated with gender (B=0.13, $P=0.043$), marital status (B=-0.32, $P<0.001$), working hours per week (B=0.01, $P=0.047$), and the number of working clinics (B=-0.17, $P=0.047$). In addition, PA represented a significant association with marital status (B=-0.34, $P<0.001$). The three-dimensional model showed appropriate fitness in the current study.

Conclusion: Most general dentists in Shiraz demonstrated low to moderate burnout regarding EE, most dentists had moderate to high burnout regarding DP and PA. Accordingly, gender, marital status, years of practice, the number of working clinics, and working hours should be considered burnout-associated factors by policymakers.

Keywords: Burnout, Dentists, Workplace, Demography

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Introduction

Occupational burnout is a globally growing health crisis among dentists. Burnout can be considered a psychological syndrome leading to emotional exhaustion (EE), depersonalization (DP), and reduced personal accomplishment (PA). Emotional exhaustion is a feeling of mental or emotional fatigue that can result in a pessimistic attitude and DP. Finally, reduced PA can develop as feelings of a lack of efficacy and self-assessment.[1]

Dentists face multiple stressors such as noise pollution, risk of infectious disease transmission, the long and uncomfortable sitting position, and high workload.[2-5] Since the beginning of the coronavirus disease 19 (COVID-19) lockdown, dentists confronted various issues such as quarantine, limited access to proper personal protective equipment, handling COVID-19 patients' dental emergencies, and fear of COVID-19 transmission through infectious aerosols. Therefore, dentists, similar to other health care workers, bear increasing stress and burnout amid the pandemic.[6-10]

Burnout affects dentists' physical and psychological well-being and consequently their job satisfaction and professional performance, as well as patient care.[3] Hence, the quality of oral health services indirectly depends on the rate of burnout among service providers.[11] Accordingly, the burnout rate and its possible contributing factors such as age, gender, personality, and working conditions should be investigated to be able to design proper interventions to improve service quality.[12]

Jin et al[13] conducted a study among Korean dentists and

revealed that 41.2%,55.9%, and 31.5% of them experienced a high degree of EE, DP, and burnout in the PA domain, respectively. This syndrome occurred more commonly in male and younger dentists without occupational calling.[13] Divaris et al [14] also reported a high rate of burnout and stress among dentistry students in Greece, and stress was higher among those involved in the clinics.[14] A systematic review in Iran demonstrated that dentists, among other professions, tolerated a high degree of burnout in the PA domain.[15] In another study performed in Iran, Semnan found that general dentists experienced high levels of burnout, highlighting the need for implementing proper strategies to reduce their stress and burnout.[16] In contrast, Bolbolian et al[17] reported the rate of burnout among dentists in Qazvin was low. As burnout can vary in different environmental situations, it seems necessary to separately assess the burnout rate in each district.

Although confirmatory factor analysis (CFA) of the Maslach Burnout Inventory (MBI) among employees has been previously conducted in Iran [18], it has not been performed for the Persian version of the Maslach Burnout Inventory-Human Services Survey (MBI-HSS) among the dentists. Therefore, this study first assessed the proposed three-dimensional model among Iranian dentists. To the best of our knowledge, although a few studies have focused on burnout among dentists worldwide[3,4,13] and in Iran,[2,16,17] no study has yet evaluated burnout among general dentists in Shiraz. As the burnout rate among dentists is unavailable for each province, it seems necessary to assess burnout across the country to plan appropriate training and interventions. Moreover, during the COVID-19 pandemic, burnout should be investigated to provide sufficient information to improve patient care and oral health services. Thus, this study aimed to investigate the degree of burnout and its related factors among general dentists in Shiraz during the COVID-19 pandemic.

Materials and Methods

Study Type

This cross-sectional study was performed amid the COVID-19 pandemic in Shiraz in 2020.

Participants (Sampling Method, Study Population, and Sample Size)

Multiple stage sampling was performed to select a representative population of general dentists in the public and private sectors of Shiraz. The calculated sample size was proportionally distributed among dentists in public and private sectors based on stratified sampling. After determining the proportions in the public and private sectors, dentists in each sector were independently sorted according to the number of the medical system. Grounded on the determined proportion in each sector and the pattern of intervals between the numbers of the medical system, the samples were identified in each sector based on systematic randomization. Participants included dentists working in the public or private sectors in Shiraz. After obtaining informed consent, a questionnaire was submitted to the participants. The dentists who refused to participate or delivered incompletely filled questionnaires were excluded from the investigation. The sample size was calculated as 385 considering an unknown rate of severe burnout ($P = 50\%$), an accuracy level (d) of 5%, and an error rate (α) of 0.05.

Instrument

A questionnaire containing demographic characteristics, including gender, age, marital status, duration of working as a general dentist, average number of patients per week, average working hours per week, and the number of working places was considered based on the aim of the study. Then, the degree of burnout was assessed using the MBI-HSS.[19] A previous study evaluated the psychometric properties of the MBI-HSS and supported the three-dimensional model for the original version.[20] The validity and reliability of the Persian version had already been confirmed by previous research (Cronbach's alpha = 0.75).[21] The exploratory factor analysis of the Persian version confirmed the three dimensions similar to the original version of MBI.[21] Both electronic and paper questionnaires were developed to facilitate the responsiveness of participants during the pandemic.

The Maslach questionnaire consists of 22 items and three dimensions. The EE domain includes nine items assessing emotional emptiness and loss of emotional sources. In addition, the DP domain includes five items assessing pessimistic attitudes and ruthless responses to service recipients. The PA domain with eight items evaluating the sense of competence in performing a personal duty.[22,23] Each item in this questionnaire has a score range of 0-6 (never = 0, several times = 1, once a month = 2, several times a month = 3, once a week or less = 4, several times a week = 5, and everyday = 6). The score of the EE dimension is in the range of 0-54 (0-17, 18-29, and 30-54 representing low, moderate, and high burnout, respectively). The DP dimension scores can vary from 0 to 30 (0-5, 6-11, and 12-30 indicating low, moderate, and high burnout, respectively). The PA dimension is in the range of 0-48 (40-48, 34-39, and 0-33 for low, moderate, and high burnout, respectively). Higher scores in the EE and DP domains and lower scores in the PA domain reflected higher rates of burnout.[1,24]

Statistical Analysis

IBM SPSS for Windows (IBM Corp, Armonk, NY), version 22.0 was used to analyze the data. Research hypotheses were tested using Pearson's correlation coefficient and independent sample *t* test. Moreover, multiple regression (enter method) was applied to control the effects of different variables on burnout dimensions. Furthermore, CFA was employed to test the model fitness of the Persian version of the questionnaire. Goodness-of-fit indices included the relative chi-square (Chi^2/

df), comparative fit index (CFI), and root means square error of approximation (RMSEA). Eventually, CFA was conducted using IBM AMOS SPSS for Windows, version 22.0.

Results

Overall, 385 dentists participated in the current study, including 213 (55.3%) males and 172 (44.7%) females. Additionally, 210 (54.5%) dentists were married, while 175 (45.5%) of them were single. Based on the results, 189 (49.1%) and 142 (36.9%) of the participants only worked in public dental clinics and had jobs only in private dental clinics, respectively. In addition, 54 (14 %) of the participants worked in both public and private clinics. The dentists were in the age range of 24-60 years and their mean age was 32.89 (±6.29) years. The mean years of activity, the number of patients per week, and working hours per week were 9.15 years, 31.55 patients, and 39.50 hours, respectively.

The reliability of the instrument was confirmed in this study (Cronbach's alpha for the EE, DP, and PA dimensions were 0.87, 0.74, and 0.70, respectively). Based on the results of Table 1, most dentists showed low to moderate burnout in terms of EE (86%) and moderate to high burnout regarding DP (90.9%) and PA (96.6%).

According to Tables 2 and 3, the univariate analysis demonstrated that among demographic and job-related factors, only the number of patients per week ($P=0.186$) and working hours per week ($P=0.963$) had no significant correlations with EE. Moreover, the multiple regression model (Table 4) revealed that EE had a significant association with gender (B = 0.26, $P<0.001$), age (B = -0.04, $P=0.044$), marital status (B = -0.42, $P<0.001$), and years of practice (B = -0.26, $P<0.001$). Male and single dentists had a greater mean EE than females (0.26) and married ones (0.42), respectively. As the dentist became older by one year, the mean EE decreased by 0.04. For each year of increase in activity, burnout in EE was reduced by 0.26.

Based on data in Table 2 and Table 3, univariate analysis represented that DP had a significant relationship with gender ($P=0.003$), marital status ($P<0.001$), years of practice ($P=0.03$), and working hours per week ($P=0.012$). The regression analysis (Table 4) also confirmed that DP had a significant association with gender (B = 0.13, $P=0.043$), marital status (B = -0.32, $P<0.001$), working hours per week (B = 0.01, $P=0.047$), and the number of workplaces (B = -0.17, $P=0.047$). Males had 0.13 more burnout in the DP dimension than females, and married individuals showed 0.32 less DP than single ones. For each working hour per week, the burnout in the DP dimension increased by 0.01. Dentists working only in one clinic had 0.17 less DP than those working in more than one center.

As regards PA, gender ($P<0.001$), age ($P<0.001$), marital status ($P<0.001$), years of practice ($P<0.001$), and working in a private office ($P<0.001$) were significantly associated with this domain. Regression analysis (Table 4) indicated that only marital status (B = -0.34, $P<0.001$) was significantly associated with PA. Married individuals represented 0.34 less personal successes than those who were single.

The result of CFA (standardized coefficients) for the Persian version of MBI-HSS is illustrated in Figure 1. Within the EE domain, item 3 was the most relevant one, while item 16 was the least relevant one. In the DP domain, items 5 and 15 were the most and least relevant ones, respectively. Finally, in the PA domain, item 19 was the most relevant one, whereas items 7, 17, and 21 were the least relevant ones. The RMSEA index and the ratio of Chi-square to df demonstrated that the three-dimensional model proposed by Maslach et al[19] provided appropriate fit indices in the present study. The value of RMSEA was 0.049, which was remarkably lower than the threshold of 0.08.[25] Moreover, the chi-square/df ratio was obtained as 1.91, which was notably lower than 3 (the value proposed to indicate a proper fit model).[25,26] However, other goodness-of-fit indices were not in the acceptable range, including CFI (0.58) which was lower than 0.9.[25]

Table 1. Burnout Scores and Distribution of Burnout Subscales Among Dentists (N = 385)

Burnout Subscales	Degree[a]	No. (%)
Emotional exhaustion	Low	167 (43.4)
	Moderate	164 (42.6)
	High	54 (14)
Depersonalization	Low	35 (9.1)
	Moderate	219 (56.9)
	High	131 (34)
Lack of personal accomplishment	Low	13 (3.4)
	Moderate	131 (34)
	High	241 (62.6)

[a]Participants were categorized into high burnout (Emotional exhaustion ≥ 30, depersonalization ≥ 12, and lack of personal accomplishment ≤ 33), moderate burnout (18 ≤ emotional exhaustion ≤ 29, 6 ≤ depersonalization ≤ 11, and 34 ≤ lack of personal accomplishment ≤ 39), and low burnout (Emotional exhaustion ≤ 17, depersonalization ≤ 5, and lack of personal accomplishment ≥ 40).

Discussion

The purpose of this study was to develop a snapshot of burnout among general dentists in Shiraz and to explore its association with demographic characteristics during the COVID-19 pandemic. Our results showed that most participants had low to moderate EE and a moderate to high rate of burnout regarding DP and PA dimensions. Male and single dentists had a greater mean EE than females and married ones. Based on the results, EE decreased as the dentist became older. In addition, males tolerated more burnout in terms of DP compared to females, and married individuals demonstrated less DP than single individuals. As the working hour per week increased, the burnout in the DP dimension increased as well. Dentists working only in one clinic had less DP than those who worked in more than one center. Married individuals represented less PA than those who were single. Considering that the CFA had not so far been performed for the Persian version

Table 2. Burnout Scores According to Demographic and Job-related Factors

Characteristics	N	Emotional Exhaustion		Depersonalization		Personal Accomplishment	
		Mean ± SD	*P* Value	Mean ± SD	*P* Value	Mean ± SD	*P* Value
Gender							
Male	213	21.56 ± 8.11	<0.001	10.61 ± 3.62	0.003	30.24 ± 5.53	<0.001
Female	172	17.78 ± 7.68		9.47 ± 3.88		32.43 ± 4.58	
Marital status							
Married	210	16.95 ± 6.99	<0.001	9.26 ± 3.50	<0.001	33.19 ± 4.47	<0.001
Unmarried	175	23.38 ± 8.04		11.11 ± 3.86		28.85 ± 5.12	
Work place number							
One number	161	18.76 ± 8.58	0.023	9.51 ± 4.22	0.012	31.63 ± 5.75	0.187
More than one number	224	20.67 ± 7.72		10.52 ± 3.37		30.92 ± 4.82	
Work in private (own) office							
No	242	17.61 ± 7.14	<0.001	9.79 ± 3.27	0.221	32.48 ± 5.11	<0.001
Yes	143	21.21 ± 8.40		10.28 ± 4.04		30.47 ± 5.18	
Work in public office							
Yes	220	20.99 ± 8.46	0.001	10.26 ± 3.97	0.325	30.80 ± 4.85	0.730
No	165	18.38 ± 7.43		9.88 ± 3.50		31.78 ± 5.67	

Note. SD: Standard deviation.

Table 3. Burnout Scores According to Demographic and Job-related Factors

Characteristics	N	Emotional Exhaustion		Depersonalization		Personal Accomplishment	
		r*	*P* Value	r*	*P* Value	r*	*P* Value
Age	385	-0.22	<0.001	-0.07	0.167	0.23	<0.001
Years of practice	385	-0.26	<0.001	-0.11	0.030	0.21	<0.001
Patient per week	385	0.07	0.186	0.08	0.118	-0.08	0.139
Working hours per week	385	<0.01	0.963	0.12	0.012	0.03	0.506

Note. *Pearson's correlation coefficient.

Table 4. Factors Associated With Burnout Subscales

Characteristics	Emotional Exhaustion		Depersonalization		Personal Accomplishment	
	B (SE)	*P* Value	B (SE)	*P* Value	B (SE)	*P* Value
Gender (male/female)	0.26 (0.07)	<0.001	0.13 (0.06)	0.043	0.08 (0.06)	0.142
Age	-0.04 (0.02)	0.044	-0.02 (0.07)	0.165	0.02 (0.02)	0.739
Marital status (married/single)	-0.42 (0.08)	<0.001	-0.32 (0.07)	<0.001	-0.34 (0.07)	<0.001
Work in public office (yes/no)	0.03 (0.12)	0.822	-0.08 (0.11)	0.461	0.04 (0.10)	0.707
Work in private office (yes/no)	-0.11 (0.11)	0.318	0.07 (0.10)	0.455	-0.03 (0.10)	0.754
Years of practice	-0.04 (0.02)	0.034	-0.03 (0.02)	0.092	0.02 (0.02)	0.126
Number of patient per week	<0.01 (<0.01)	0.724	<0.01 (0.01)	0.761	<-0.01 (<0.01)	0.665
Working hours per week	<0.01 (<0.01)	0.836	0.01 (<0.01)	0.047	<0.01 (<0.01)	0.690
Number of work place (one/more than one)	-0.03 (0.09)	0.774	-0.17 (0.08)	0.047	-0.03 (0.08)	0.739

Note. SE: Standard error.

of the MBI-HSS among dentists, this study evaluated the proposed three-dimensional model for this sample of health professionals, and the indices revealed that the model appropriately fitted the data among the Iranian dentists.

A similar study in Korea reported that a high percentage of Korean dentists (41.2%) had severe degrees of EE, and only 18% of them showed low EE degrees. The results regarding the DP dimension indicated that a high percentage of Korean dentists (55.9%) had severe DP (with an average DP score of 11.22). In terms of the PA dimension, 31.5% and 41.5% of Korean dentists demonstrated high and low (with an average score of 36.54) grades, respectively. In comparison with the current study, in terms of EE, general dentists in Shiraz represented lower degrees of EE than Korean dentists. However, similar to Korean dentists, a high percentage of general dentists in Shiraz were affected with regard

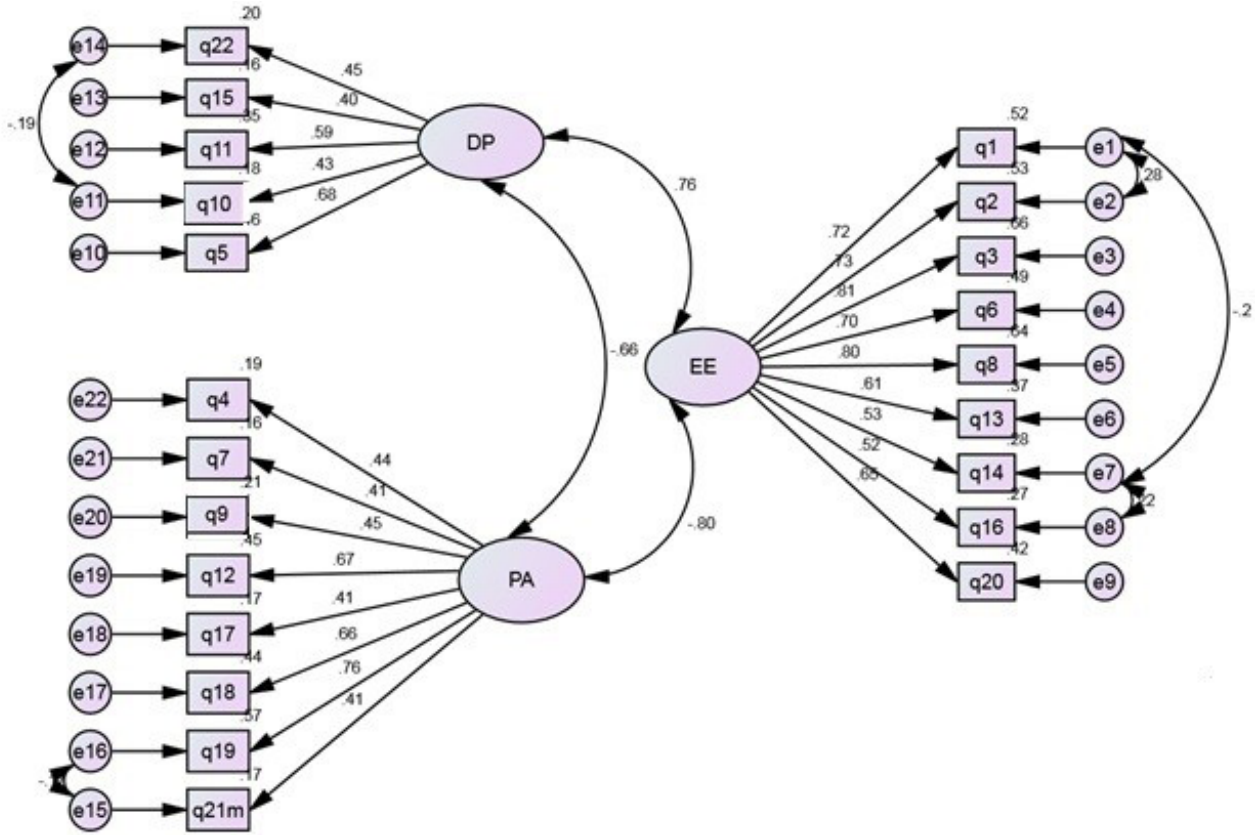

Figure 1. The Three-factor Model for Maslach Burnout Inventory-Human Services Survey Obtained From Confirmatory Factor Analysis

to DP and PA. The average score of dentists in terms of DP in the current study was higher than that of Korean dentists.[13] Given that this study was performed during the COVID-19 pandemic, this issue could have had an impact on the rate of burnout among our participants. Therefore, caution should be taken when comparing similar previous studies with the current one.

The working hours per week only affected the DP domain while not affecting the other two domains. This issue is in line with the result of a previous study in Semnan.[16] Theresa et al also reported working hours as an influential factor affecting burnout among health care personnel during the COVID-19 pandemic.[6]

Age, as another influential factor on burnout, had an impact on EE so that older dentists experienced less EE. Conversely, some studies in Spain and the Netherlands reported no significant association between age and burnout among dentists.[3,4] The discrepancies can be due to different oral health care systems across countries. In the current study, male dentists experienced more EE and DP than females. It seems that female dentists applied more efficient protective methods to avoid burnout. Moreover, male dentists in Iran usually bear the financial burden of the family. Hence, burnout reduction strategies among dentists should be more focused on male dentists. However, Torabi Parizi et al[2] in Kerman did not find a significant difference in burnout among genders. Likewise, in the United Arab Emirates, researchers revealed no significant association between burnout and gender among participants.[8]

According to the finding of the present study, although single dentists showed more personal success than married ones, they demonstrated more burnout in the EE and DP domains than married dentists. These findings can be related to the cultural context of our society.

It is noteworthy that the current research was conducted amid the coronavirus pandemic and can be considered one of the first studies assessing burnout among dentists in Shiraz during the COVID-19 pandemic. Quarantine regulations, emergency dental services for COVID-19 patients, and shortages in personal protective equipment could be among the challenges leading to burnout during the COVID-19 outbreak. This study assessed the association of demographic and job-related factors with burnout, while most previous studies evaluated burnout without considering or controlling these contributing factors. Moreover, as oral health care delivery systems are different across and within countries, we felt a necessity to assess burnout and its contributing factors among a large group of dentists in Shiraz.

One of the limitations of the current study was the difficulty in recruiting an appropriate number of dentists due to the fear of the COVID-19 outbreak which decreased the number of active dentists. Thus, an online questionnaire was developed to overcome this issue. However, the online questionnaire raised other difficulties such as problems with Internet access and the unwillingness of some dentists to participate in the

study. Another limitation of this study was the lack of a similar study during the COVID-19 outbreak. Therefore, burnout in the current study could not be definitely related to the pandemic. Nevertheless, similar studies in many countries reported high levels of stress and burnout in dentistry teams during viral pandemics.[7-10]

The diagnosis of burnout in the initial stages can prevent its subsequent psychological and professional consequences. Therefore, further longitudinal studies should be performed to detect the early signs of burnout and more precisely assess the impacts of several parameters, including personality and perceived stress during the COVID-19 pandemic, on this phenomenon. However, these studies are more expensive and time-consuming. Similar studies should be conducted on general dentists across the country to obtain a comprehensive snapshot of burnout in Iran. Policymakers in the oral health care system must develop appropriate preventive strategies and remedies to manage burnout among dentists.

Conclusion

Based on the findings of our study, most general dentists demonstrated low to moderate EE and moderate to high DP and PA. Gender, marital status, years of activity, number of workplaces, and working hours per week could be considered as associated factors in this regard.

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Author Contributions

AB: Supervised the study, participated in designing the study; MB: Involved in the study conception and design; AAM: Collected and analyzed the data. All authors participated in drafting and final approval of the manuscript.

Conflict of Interest Disclosures

The authors declared no conflicts of interest.

Ethical Approval

This study was approved by the Ethics Committee of Shiraz University of Medical Sciences (IR.SUMS.DENTAl.REC.1399.140).

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