

Burnout and its related factors in Korean dentists

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Objectives: Dentistry has been identified as one of the most stressful work environments. Knowledge of modifiable work-environment factors related to job stress could lead to a strategy and policy to provide a better work environment for dentists. The aims of this study were to examine the degree and distribution of burnout and to determine the factors associated with burnout subscale of Korean dentists. **Methods:** A cross-sectional survey of Korean dentists was conducted using a custom-designed and validated questionnaire that incorporated the Maslach Burnout Inventory Human Services Survey (MBI-HSS) as well as questions regarding sociodemographic and job-related characteristics. A random sample of 1,000 dentists was selected from 13,207 registered dentists in the Korean Dental Association. The MBI-HSS scores were summarised in the three dimensions of emotional exhaustion, depersonalisation, and personal sense of accomplishment. Bivariate and multivariate analyses were conducted to assess the prevalence of burnout and its related factors. **Results:** The adjusted response rate was 45.9% (444/967). In the subscales of burnout, 41.2%, 55.9%, and 41.4% of respondents scored highly in emotional exhaustion and depersonalisation and poorly for personal sense of accomplishment, respectively. High burnout seems to be more likely to occur in association with some of the sociodemographic and job-related characteristics, especially younger age, male gender, without occupational calling, and unwilling to reselect a dentistry as a job. **Conclusions:** This study suggests that burnout is a common problem in Korean dentists and that occupational calling and willing to reselect a dentistry as a job are important factors for managing burnout.

Key words: Burnout, dentist, job, stress

INTRODUCTION

At first glance, the dental profession appears to be a rewarding and satisfying job, but dentists often feel considerable pressure mentally. Factors related to the dentist's stress during day-to-day work are related mainly to the patient's pain and contact with multiple layers of anxious people^{1–3}. Korean dentists may feel under pressure to be superior to other dentists in terms of their dental technique, may experience management difficulties as a result of an increased number of dentists, and have problems with the demand and supply of dental assistants⁴. The dental profession and dentist's social status are believed to have been shaken as a result of the low national cost policy regarding health care, patient's changing needs, and 'variable opening hours of dental clinics as well as expansion in the number of dentists'.

Stress exists everywhere in the course of human life. Selecting the most appropriate tension-managing

method is important because tension can be a good or harmful stimulus depending on how one copes with it. Therefore, it is important to respond in an appropriate way rather than eliminate the stress.

Burnout is considered as a special type of stress. Schaufeli and Peeters⁵ defined job stress as a special relationship between the employee and their surrounding environment. On the other hand, burnout is a psychological phenomenon, a type of reaction to chronic stress caused by the accumulation and long-term negative effect of stress. Maslach *et al.*⁶ reported that burnout consists of three different subcomponents: emotional exhaustion, depersonalisation, and diminished personal sense of accomplishment. Emotional exhaustion is defined as a condition that results from an excessive amount of psychological burden or demand. As a result, people tend to feel as if their inner resources are being drained. Depersonalisation is defined as a condition in which the viewpoint of people becomes cynical and indifferent, and diminished

personal sense of accomplishment is defined as a negative assessment of oneself from a shortage of professional achievement.

People who have experienced general stress can return to their normal state through adaptive mechanisms, but people who have experienced burnout cannot return to a normal state because the adaptive mechanisms do not work. Therefore, burnout can result in turnover, absenteeism, lack of job commitment, and job dissatisfaction, and is related to the variables that cause job-related problems, such as lowering the productivity of the organisation⁷. In addition, many empirical studies have shown that burnout is related to turnover intention.

The fact that people engaged in the medical and dental field experience considerable stress is well known. Te Brake *et al.*⁸ studied the sequence of the three burnout dimensions, based upon two-wave longitudinal design. They reported that emotional exhaustion is the key dimension of burnout, and early signs of emotional exhaustion, as well as a feeling of reduced personal accomplishment, should be taken as an early warning of burnout risk. Ahola and Hakanen performed a longitudinal survey on overwork, burnout, and depression, targeting 2,555 Finnish dentists over a 3-year period, and reported that of the respondents who did not show depression in the first survey, 23% showed depression in the 3-year follow-up survey⁹. Job strain predisposes to burnout directly and via depression. In addition, the possibility of job burnout was 2.6 times higher with depression than without depression. Gorter and Freeman surveyed 61 general dental practices in Northern Ireland and reported that burnout is a serious threat for dental health professionals, and dentists appeared to have most trouble with the work environment aspects of time pressure, financial worries, and difficult patients³. A study of job burnout targeting 1,393 family doctors in 12 European countries revealed job burnout to be a common problem, and related to workload, job satisfaction, turnover intention, alcohol, smoking, and legal and/or illegal drug consumption¹⁰. Recently, some studies reported stress and burnout of dental residents and postgraduate students. Divaris *et al.*¹¹ reported high rates of burnout among 99 graduate students enrolled in the Athens University School of Dentistry. Stress was positively associated with burnout and a higher level in clinical residency compared with non-clinical and PhD programmes. In contrast, they reported low levels of stress and burnout among 43 dental residents enrolled in the University of Bern, Switzerland¹². Burnout levels of dentists may vary, depending on the countries where they are residing, particular years of the research, social and economic levels, and the circumstances of their private clinics. Korea is one of the fastest-changing countries in every

field. Also, dental professions in Korea are under pressure from various levels regarding increased numbers of local clinics, low medical cost policy under the control of the government, and the changing treatment needs of patients. However, no research related to this topic has been reported.

Therefore, this study measured the degree of burnout in the dental field, targeting Korean dentists. The aim of this study was to identify the degree of burnout and examine the characteristics and related factors associated with job burnout in Korean dentists.

METHODS

Subjects

Among the 13,207 dentists registered on the list of Korean Dental Association members in 2009, 1,000 were selected by systematic random sampling as research subjects in this study. A postal questionnaire was used for data collection because of the wide regional distribution of subjects. The first questionnaire was mailed, in February 2009, to the 1,000 dentists selected to participate in this study. In addition, the Korean Dental Association sent an official document to the subjects to increase the response rate. The second questionnaire was re-sent, in March 2009, to the subjects who did not reply to the first questionnaire and such a follow-up study was conducted until 2009.

Fifteen questionnaires of the first 1,000 dispatches were returned marked 'address unknown' and 523 dentists did not respond, giving a total of 462 mailed data sets acquired after two questionnaire dispatches. Eighteen data sets (nine multi non-response, nine private hired dentists) were excluded from the 462 acquired data sets, resulting in a total of 444 questionnaire data sets being used in the final analysis. All participating dentists provided written consent. This research was approved by the Institutional Review Board at Kyungpook National University Hospital (KNUH 2013-10-001-001). This study was conducted in full accordance with the World Medical Association Declaration of Helsinki.

Survey instrument

The degree of burnout for private clinic dentists was measured using the Maslach Burnout Inventory Human Services Survey (MBI-HSS) of Maslach *et al.*⁶. The MBI-HSS is composed of three factors and 22 questions associated with job burnout. The twenty-two questions were composed of nine on emotional exhaustion, five on depersonalisation, and eight on personal sense of accomplishment (*Figure 1*). While working as a dentist, the respondents answered each

The scale of job burnout	
✳	To measure degree of burnout about with a 7 point Likert scale about the following questions
①	Never
②	In less than 2~3 times in a year
③	In less than 1 time in a month
④	2~3 times in a month
⑤	1 time in a week
⑥	2~3 times in a week
⑦	Everyday
	1. I feel mentally tired because of work.
	2. At the end of the day, I am completely exhausted.
	3. I feel tired when I wake up in the morning and I feel too hard to think what I should do.
	4. It is easy for me to understand what patient wishes during treatment.
	5. There are times when I treat some patients coldly.
	6. It is very hard for me to deal with people all day long.
	7. I deal the patient's problem very effectively.
	8. I feel completely exhausted state due to work.
	9. I feel positive impact on other people's life as a dentist.
	10. I feel humane attachment toward people diminished working as a dentist.
	11. Due to occupation, I am concerned about getting emotionally dry.
	12. I am full of energy during the work.
	13. I feel motivation of work falling.
	14. I seem to overwork myself.
	15. I don't care for some patients at all.
	16. To work together with other people is a big stress for me.
	17. When dealing with a patient, I can create a relaxing atmosphere.
	18. I feel worthwhile after treatment the patients.
	19. I have made a lot of value in a job as a dentist.
	20. I feel like standing on the edge of a cliff.
	21. I do not expose my emotion during the work.
	22. I seem to blame some of the patient's problem on myself.

Figure 1. Questions and scale associated with job burnout.

question on a 7-point Likert scale. The degree of burnout associated with each factor was rated as follows: 'Absolutely no' was rated as 0; <2–3 times within 1 year as 1; <1 time in a month as 2; 2–3 times in a month as 3; once in a week as 4; 2–3 times in a week as 5; and every day as 6. The sums of the scores were used as the evaluation criteria. Higher scores in emotional exhaustion (0–54) and depersonalisation (0–30) factors and a lower score in personal sense of accomplishment (0–48) were interpreted as a high degree of burnout.

The questionnaire also collected information about the sociodemographic and job-related characteristics of the subjects, including gender, age, marital status, educational level, workplace type, residency training,

years of practice, number of hours worked per week, overnight work, occupational calling, and reselection as a dentist as a job. Occupational calling and reselection as a dentist as a job were surveyed with dichotomous (yes/no) questions: 'Dentistry fulfills my current career aspiration' and 'I would make same decision to go into dentistry again', respectively.

Validity and reliability

Burnout was measured using three subscales in this study, and the validity and reliability of the survey instrument were assessed by factor analysis and Cronbach's α coefficient (*Table 1*). Following factor extraction using three pieces of fixed factors from 444 data

Table 1 Validity and reliability of burnout questionnaire

Factor name and item	Factor loading			Reliability (Cronbach's α)	
	I	II	III		
Emotional exhaustion					
2. Used up	0.89	0.08	0.09	0.89	
8. Burned out	0.84	-0.03	0.25		
1. Emotionally drained	0.81	-0.04	0.24		
3. Fatigued	0.81	-0.11	0.25		
14. Too hard	0.65	0.14	0.15		
16. Much stress	0.63	-0.07	0.24		
6. Strain	0.56	-0.12	0.49		
13. Frustrated	0.54	-0.09	0.47		
20. End of tether	0.48	-0.21	0.44		
Personal accomplishment					
18. Exhilarated	0.03	0.82	-0.13	0.82	
17. Relaxed atmosphere	0.05	0.79	-0.19		
9. Positively influence	-0.04	0.74	-0.12		
19. Accomplish	-0.03	0.72	-0.21		
7. Deal effectively	-0.04	0.66	-0.05		
12. Very energetic	-0.19	0.66	-0.24		
4. Easily understand	0.01	0.60	0.13		
21. Deal calmly	0.04	0.48	0.15		
Depersonalisation					
10. More callous	0.38	-0.14	0.71		0.78
5. Impersonal	0.12	-0.03	0.71		
15. Not care	0.10	-0.06	0.69		
11. Hardening emotionally	0.47	-0.16	0.61		
22. Blame	0.34	0.05	0.44		
Eigenvalue	7.01	3.68	1.32		
Proportion (%)	31.85	16.73	6.01		

sets and principal component analysis and varimax rotation, the following results were obtained. In regard to 22 questions regarding job burnout, factors I, II, and III consisted of items representing emotional exhaustion (nine questions), personal sense of accomplishment (eight questions), and depersonalisation (five questions), respectively; 54.6% of all variations were explained by these three factors. The level of concentration validity and discriminant validity were high because the survey tool used in this study was classified into the same form as the question presented in the MBI-HSS.

According to the results of the examined internal consistency of each factor for the 22 questions measuring burnout in Korean dentists, the Cronbach's α

coefficient for emotional exhaustion, depersonalisation, and personal sense of accomplishment was 0.89, 0.78, and 0.82, respectively (Table 1).

Statistical analysis

The score of items for each factor were classified into three categories of burnout based on the mean score, in line with previous research¹³: high burnout (emotional exhaustion ≥ 27 , depersonalisation ≥ 10 , and personal sense of accomplishment ≤ 33), medium burnout ($14 \leq$ emotional exhaustion ≤ 26 , $6 \leq$ depersonalisation ≤ 9 , and $34 \leq$ personal sense of accomplishment ≤ 39), and low burnout (emotional exhaustion ≤ 13 , depersonalisation ≤ 5 , and personal sense of accomplishment ≥ 40).

The differences in burnout according to the respondent's sociodemographic and job-related characteristics were examined by a *t*-test and one-way analysis of variance (ANOVA). If there was a significant difference in one-way ANOVA, a subsequent *post-hoc* comparison was conducted using Scheffé's method. Multiple regression analysis was performed to verify the association between burnout subscale and its related factors, including sociodemographic and job-related characteristics.

All statistical analyses were performed using SPSS 19.0 (SPSS 19.0k for window, SPSS Inc., Chicago, IL, USA). A *P*-value of <0.05 was considered statistically significant.

RESULTS

Table 2 lists the mean and distribution of the burnout subscales. The mean emotional exhaustion score was 24.16 [standard error (SE) = 0.54] out of a possible 54, which represents a medium grade; 41.2% of respondents showed a high grade in emotional exhaustion, whereas only 18% showed a low grade. The mean depersonalisation score was 11.22 (SE = 0.30) out of 30, which represented a high grade in depersonalisation; 55.9% of respondents showed a high grade in depersonalisation, whereas only 18.9% showed a low grade. In the case of personal sense of

Table 2 Burnout score and distribution of burnout subscale ($n = 444$)

Burnout subscale	Burnout score*	Distribution [†]		
		High	Medium	Low
Emotional exhaustion	24.16 \pm 0.54	183 (41.2)	181 (40.8)	80 (18.0)
Depersonalisation	11.22 \pm 0.30	248 (55.9)	112 (25.2)	84 (18.9)
Personal accomplishment	36.54 \pm 0.40	140 (31.5)	120 (27.0)	184 (41.4)

*Values represent the mean \pm standard error (SE) of the following burnout subscales: emotional exhaustion (minimum = 0, maximum = 54), depersonalisation (minimum = 0, maximum = 30), and personal accomplishment (minimum = 5, maximum = 48).

[†]*n* (%), respondents were categorised into high burnout (emotional exhaustion ≥ 27 , depersonalisation ≥ 10 , and personal accomplishment ≤ 33), medium burnout ($14 \leq$ emotional exhaustion ≤ 26 , $6 \leq$ depersonalisation ≤ 9 , and $34 \leq$ personal accomplishment ≤ 39), or low burnout (emotional exhaustion ≤ 13 , depersonalisation ≤ 5 , and personal accomplishment ≥ 40).

accomplishment, the mean score was 36.54 (SE = 0.40) out of a possible 48, which represents a medium grade; 41.4% of respondents showed a low grade in personal sense of accomplishment, whereas 31.5% showed a high grade.

Table 3 lists the mean differences in burnout subscales according to the respondent's sociodemographic and job-related characteristics. The mean difference in emotional exhaustion according to the respondent's sociodemographic characteristics was statistically significant only according to age ($P = 0.022$).

The mean degree of emotional exhaustion according to age was 25.85, 24.56, and 21.81 in those <40, 40–49, and ≥ 50 years of age, respectively, showing a decreasing tendency with increasing age. The ensuing *post-hoc* comparisons showed a significant difference between those <40 and those ≥ 50 years of age. Among the job-related characteristics, the mean differences regarding emotional exhaustion were statistically significant according to whether the dentists had

overnight work, occupational calling, and reselection as a dentist as a job. The overnight work group (25.99) had significantly higher emotional exhaustion than dentists who did not work overnight (23.60) ($P = 0.046$).

The degree of emotional exhaustion in the group with occupational calling (22.70) was significantly lower than that of dentists with no occupational calling (29.75) ($P < 0.001$). Moreover, the degree of emotional exhaustion in the group that were willing to reselect a dentist as a job (22.16) was significantly lower than that of those who would not reselect a dentist as a job (27.20) ($P < 0.001$).

In the case of depersonalisation, the mean difference was statistically significant according to age, but not to gender, marital status, or educational level among the respondent's sociodemographic characteristics. Depersonalisation according to age was rated as 13.09, 11.07, and 9.73 in subjects <40, 40–49, and ≥ 50 years of age, respectively, and was significantly

Table 3 Burnout score according to sociodemographic and job-related characteristics

Characteristic	n	Emotional exhaustion		Depersonalisation		Personal accomplishment	
		Mean \pm SE	P-value*	Mean \pm SE	P-value*	Mean \pm SE	P-value*
Gender							
Male	359	24.60 \pm 0.60	0.093	11.44 \pm 0.33	0.115	35.86 \pm 0.45	<0.001
Female	85	22.28 \pm 1.21		10.26 \pm 0.64		39.40 \pm 0.69	
Age (years)							
<40 years	110	25.85 \pm 0.99 ^A	0.022	13.09 \pm 0.56 ^A	<0.001	35.58 \pm 0.76 ^{AB}	0.031
40–49 years	217	24.56 \pm 0.76 ^{AB}		11.07 \pm 0.41 ^B		37.60 \pm 0.52 ^A	
≥ 50 years	117	21.81 \pm 1.16 ^B		9.73 \pm 0.60 ^B		35.46 \pm 0.89 ^B	
Marital status							
Unmarried	24	23.96 \pm 2.58	0.930	11.29 \pm 1.24	0.951	36.46 \pm 1.73	0.963
Married	420	24.17 \pm 0.56		11.21 \pm 0.30		36.54 \pm 0.41	
Education level							
DDS	182	23.16 \pm 0.78	0.177	11.22 \pm 0.44	0.977	35.67 \pm 0.63	0.107
Master	84	23.75 \pm 1.35		11.33 \pm 0.68		36.33 \pm 0.87	
PhD	178	25.37 \pm 0.88		11.16 \pm 0.49		37.52 \pm 0.62	
Workplace type							
Solo	376	24.01 \pm 0.59	0.510	11.09 \pm 0.32	0.317	36.27 \pm 0.43	0.109
Group	68	25.00 \pm 1.37		11.91 \pm 0.74		38.03 \pm 0.99	
Residency training							
Yes	170	23.83 \pm 0.93	0.634	10.71 \pm 0.50	0.173	37.66 \pm 0.59	0.025
No	274	24.36 \pm 0.66		11.53 \pm 0.36		35.84 \pm 0.52	
Years of practice							
<10 years	124	25.41 \pm 0.92	0.089	12.94 \pm 0.54 ^A	0.001	36.27 \pm 0.70	0.456
10–19 years	164	24.71 \pm 0.92		10.82 \pm 0.48 ^B		37.18 \pm 0.64	
≥ 20 years	156	22.58 \pm 0.95		10.26 \pm 0.49 ^B		36.07 \pm 0.72	
Working hours per week							
<40 hours	67	21.66 \pm 1.43	0.141	9.15 \pm 0.68 ^A	0.012	39.39 \pm 0.87 ^A	0.006
40–49 hours	286	24.48 \pm 0.69		11.52 \pm 0.37 ^B		35.78 \pm 0.51 ^B	
≥ 50 hours	91	24.99 \pm 1.09		11.79 \pm 0.64 ^B		36.82 \pm 0.81 ^{AB}	
Work at night							
Yes	103	25.99 \pm 1.00	0.046	12.19 \pm 0.62	0.069	36.33 \pm 0.85	0.776
No	341	23.60 \pm 0.64		10.92 \pm 0.33		36.60 \pm 0.45	
Occupational calling							
Yes	352	22.70 \pm 0.57	<0.001	10.51 \pm 0.31	<0.001	37.64 \pm 0.43	<0.001
No	92	29.75 \pm 1.29		13.92 \pm 0.70		32.29 \pm 0.85	
Reselection							
Yes	268	22.16 \pm 0.64	<0.001	9.94 \pm 0.35	<0.001	38.06 \pm 0.49	<0.001
No	176	27.20 \pm 0.91		13.15 \pm 0.49		34.21 \pm 0.62	

The same character (^{A,B}) denoted no significant differences according to Scheffé's multiple comparison at $\alpha = 0.05$.

*P-values determined by *t*-test or one-way analysis of variance (ANOVA).

different ($P < 0.001$). In subsequent *post-hoc* comparisons, the differences between the <40 and 40–49 years' age groups, and ≥ 50 years' age group were significant, respectively. Depersonalisation according to the job-related characteristics had significant differences in years of practice, working hours per week, and whether they had occupational calling and reselection as a dentist as a job. Depersonalisation according to the number of years of practice scored 12.94, 10.82, and 10.26 in the <10, 10–19, and ≥ 20 years' age groups, respectively, and the differences among them were statistically significant ($P = 0.001$). Depersonalisation according to the number of hours worked per week scored 9.15, 11.52, and 11.79 in the <40, 40–49, and ≥ 50 hours' groups, respectively. Depersonalisation showed a tendency to increase with number of hours worked and was significantly different among all groups ($P = 0.012$).

The degree of depersonalisation of the group with occupational calling (10.51) was significantly lower than in those with no occupational calling (13.92) ($P < 0.001$). Moreover, the degree of depersonalisation of the group that were willing to reselect a dentist as a job (9.94) was significantly lower than in those who would not reselect a dentist as a job (13.15) ($P < 0.001$).

In the personal sense of accomplishment according to sociodemographic characteristics, the differences in gender and age were significant, but the differences in marital status and educational level were not. The female group (39.40) had significantly higher personal sense of accomplishment than the male group (35.86) ($P < 0.001$). The personal sense of accomplishment according to age was rated as 35.58, 37.60, and 35.46 in the <40, 40–49, and ≥ 50 years' age groups, respectively and there was significant difference ($P = 0.031$). In subsequent *post-hoc* comparisons, the difference between the 40–49 years' and the ≥ 50 years' age groups was statistically significant. Among the job-related characteristics, the mean differences of personal sense of accomplishment were statistically significant regarding whether they had residency training, number of hours worked per week, and whether they had occupational calling and the will to reselect a dentist as a job, but not in the workplace type, years of practice, and whether they had overnight work. The personal sense of accomplishment of the residency training group (37.66) was significantly higher than that of those who were not residency trainees (35.84) ($P = 0.025$). The personal sense of accomplishment according to the number of hours worked per week scored 39.39, 35.78, and 36.82 in the <40, 40–49, and ≥ 50 hours' groups, respectively, and there was significant difference among all groups ($P = 0.006$). In subsequent *post-hoc* comparison, the difference between the <40 hours

group and the 40–49 hours group was statistically significant.

The degree of personal sense of accomplishment of the group with occupational calling (37.64) was significantly higher than that of those with no occupational calling (32.29) ($P < 0.001$). Moreover, the degree of personal sense of accomplishment in the group that was willing to reselect a dentist as a job (38.06) was significantly higher than that in those who would not reselect a dentist as a job (34.21) ($P < 0.001$).

Personal sense of accomplishment in the group with occupational calling was 37.64 and that in those with no occupational calling was 32.29, which were statistically significant ($P < 0.001$). The personal sense of accomplishment in the group who were willing to reselect a dentist as a job was significantly higher (38.06) than that in those who would not reselect a dentist as a job (34.21) ($P < 0.001$).

A multiple regression analysis was carried out to examine the effect of sociodemographic characteristics and job-related characteristics of the study participants on the subfactors of job burnout, and the results are presented in *Table 4*. In order to analyse the influence of independent variables involved in the regression analysis, the variable selection method was established.

If a high-level correlation exists among independent variables in a multiple regression analysis, the predictability of independent variables may be reduced because of errors in estimating the regression coefficient, so that the multicollinearity has been evaluated by calculating the variance inflation factor (VIF). As a result, there is no problem of multicollinearity caused by numerical values of VIF that are below 10. First of all, the regression model evaluated to be valid among the regression models, which took emotional exhaustion as a dependent variable, appeared to be statistically significant ($F = 6.018$, $P < 0.001$), and the independent variables considered in the model accounted for 12.0% of the entire change in emotional exhaustion (adjusted $R^2 = 0.120$). Among the independent variables, age, educational level, occupational calling, and willingness to reselect a dentist as a job appeared to have a statistically significant relationship with emotional exhaustion. The degree of emotional exhaustion was reduced with increased age ($B = -0.36$, $P = 0.014$). The degree of emotional exhaustion among the group with a PhD degree appeared to be higher than that of the group with a bachelor's degree ($B = 3.66$, $P = 0.003$). The degree of emotional exhaustion of the group with occupational calling was lower than that of those with no occupational calling ($B = 5.92$, $P < 0.001$). Finally, the degree of emotional exhaustion of the group who were willing to reselect a dentist as a job was lower

Table 4 Factors associated with the burnout subscale

Characteristic	Emotional exhaustion		Depersonalisation		Personal accomplishment	
	B (SE)	P-value	B (SE)	P-value	B (SE)	P-value
Gender						
Male versus Female	-2.64 (1.40)	0.060	-1.39 (0.75)	0.066	2.91 (1.03)	0.005
Age						
Per 1 year	-0.36 (0.15)	0.014	-0.23 (0.08)	0.004	-0.02 (0.11)	0.872
Marital status						
Unmarried versus Married	0.68 (2.32)	0.770	0.37 (1.25)	0.765	0.45 (0.26)	0.794
Education level						
Only DDS versus Master	0.14 (1.49)	0.927	-0.14 (0.80)	0.858	0.34 (1.09)	0.753
Only DDS versus PhD	3.66 (1.24)	0.003	0.92 (0.67)	0.170	1.53 (0.91)	0.093
Workplace type						
Sole versus Group	1.10 (1.47)	0.457	0.95 (0.79)	0.231	1.16 (1.08)	0.284
Residency training						
Yes versus No	0.74 (1.21)	0.543	0.52 (0.65)	0.427	-1.01 (0.89)	0.258
Years of practice						
Per 1 year	0.06 (0.14)	0.664	0.04 (0.08)	0.620	-0.06 (0.10)	0.598
Working hours per week						
Per 1 hour	0.06 (0.09)	0.528	0.09 (0.05)	0.065	-0.05 (0.06)	0.403
Work at night						
Yes versus No	0.66 (1.37)	0.628	0.82 (0.74)	0.267	0.36 (1.01)	0.720
Occupational calling						
Yes versus No	5.92 (1.35)	<0.001	2.41 (0.73)	0.001	-4.09 (0.99)	<0.001
Reselection						
Yes versus No	3.49 (1.12)	0.002	2.62 (0.60)	<0.001	-2.28 (0.82)	0.006
	$F = 6.018,$ Adjusted $R^2 = 0.120$		$F = 6.975,$ Adjusted $R^2 = 0.139$		$F = 5.448,$ Adjusted $R^2 = 0.108$	

B, estimated regression coefficient; SE, standard error.

than that of those who would not reselect a dentist as a job ($B = 3.49, P = 0.002$).

The regression model evaluated to be valid among the regression models, which used depersonalisation as a dependent variable, appeared to be significant statistically ($F = 6.975, P < 0.001$), and the independent variables considered in the model accounted for 12.0% of the entire change in depersonalisation (adjusted $R^2 = 0.139$). Among the independent variables, age, occupational calling, and willingness to reselect a dentist as a job appeared to have a statistically significant relationship with depersonalisation.

The degree of depersonalisation was reduced with increasing age ($B = -0.23, P = 0.004$). The degree of depersonalisation of the group with occupational calling was lower than that of those with no occupational calling ($B = 2.41, P = 0.001$). Moreover, the degree of depersonalisation of the group who were willing to reselect a dentist as a job was lower than that of those who would not reselect a dentist as a job ($B = 2.62, P < 0.001$).

The regression model evaluated to be valid among the regression models, which used personal sense of accomplishment as a dependent variable, appeared to be significant statistically ($F = 5.448, P < 0.001$), and the independent variables considered in the model accounted for 10.8% of the entire change in personal sense of accomplishment (adjusted $R^2 = 0.108$).

Among the independent variables, gender, occupational calling, and willingness to reselect a dentist as a

job appeared to have a statistically significant relationship with a personal sense of accomplishment. Female dentists had a higher personal sense of accomplishment in comparison with male dentists ($B = 2.91, P = 0.005$). The personal sense of accomplishment of the group with occupational calling was higher than that of those with no occupational calling ($B = -4.09, P < 0.001$). Moreover, the personal sense of accomplishment of the group who were willing to reselect a dentist as a job was higher than that in those who would not reselect a dentist as a job ($B = -2.28, P = 0.006$).

DISCUSSION

Burnout is a psychological phenomenon like emotional exhaustion, and depersonalisation and reduced personal sense of accomplishment are observed in people in employment dealing with people. Emotional exhaustion is characterised by excessive feelings and personal emotional expenditure. Depersonalisation is negative, cynical, and excessively objective, and includes an inhumane attitude and negative feelings towards others⁶. Reduced personal sense of accomplishment is a tendency to judge others negatively and involves a reduction in personal skills and reduced successful achievement, particularly in collaboration with others. Burnout negatively affects human relationships and well-being, showing a gradual decrease in human well-being. In addition, burnout is related not

only to the health of individuals but also to the performance of work. The aim of this study was to evaluate burnout and its related factors in private clinic dentists in Korea.

In this study, the proportion of male dentists was 80.9%, which was similar to that of our previous survey (82.0%)⁴. The mean age of the subjects was 45.6 years, and the proportions of graduate or doctoral student dentists and residents were 40.1% and 38.3%, respectively, which were slightly higher than the 41.6 years, 30.0%, and 36.0%, respectively, reported in the 2001 survey⁴. The number of hours worked per week was 44.2 on average, which was slightly (but not significantly) lower than the 45.5 hours reported in the 2001 survey⁴; and the mean years of practice was 16.2, which was significantly higher than the 9.9 years reported in the 2001 survey. This means that Korean Dental Society is getting old. The characteristics of Korean Dental professionals were re-evaluated almost 10 years after the last report in 2001. The author assumes that the reason for the increase in the average age and the level of education, or the decrease in the number of hours worked per week is that the Korean dental community is gradually reflecting the social phenomenon, the ageing population, in Korean society.

According to Gorter and Freeman³, one-quarter of respondents were categorised as having a serious burnout risk. Emotional exhaustion of male respondents was slightly higher than that of female respondents. Dentists appeared to have most trouble with the work-environment aspects time pressure and financial worries. High rates of burnout manifestations were detected among this sample of Greek post-graduate dental students. Residents in clinical programmes reported significantly higher levels of perceived stress compared with non-clinical and PhD students ($P < 0.05$)¹¹.

The mean degree of emotional exhaustion, depersonalisation, and personal sense of accomplishment scored 24.16 (range: 0–54), 11.22 (range: 0–30), and 36.54 (range: 5–48), respectively. Moreover, 41.2% of respondents showed a high grade in emotional exhaustion, 55.9% showed a high grade in depersonalisation, and 31.5% showed a low grade in personal sense of accomplishment. The survey results of 1,393 family doctors from 12 European countries regarding burnout, assessed using the MBI-HSS, were as follows: the proportion of burnout in emotional exhaustion, depersonalisation, and personal sense of accomplishment was 43.0%, 32.0%, and 32.0%, respectively. Therefore, the degree of emotional exhaustion and personal sense of accomplishment in Europe was similar to that in Korea, but higher depersonalisation was noted in Korean private clinic dentists than in European dentists^{8,9}.

In the mean differences of the burnout subscale according to sociodemographic characteristics, emotional exhaustion and depersonalisation were significantly different in different age groups, and personal sense of accomplishment was significantly different in different gender and age groups (*Table 3*). Regarding age, the burnout subscale showed a decreasing tendency for burnout with older age. A similar result was observed in a previous study, which showed a higher degree of burnout in younger age groups and unmarried subjects^{10,14,15}. This can be interpreted to mean that people can better understand the cause of burnout as they become older, and that being in a stable emotional condition and coping with environmentally related conflicts by forming amicable interpersonal relationships are good strategies. Considering the burnout subscale according to job-related characteristics, most burnout subscales were significantly different regarding whether or not subjects worked overnight, number of years of practice, and number of hours worked per week (*Table 3*). This is consistent with the results of previous studies^{15,16}, in that high burnout related to heavy workload (a long working week and a large number of patients, etc.) and job-related stress (such as overnight or weekend work).

According to the analysis on the effects of sociodemographic characteristics and job-related characteristics of the study participants, it was concluded that the degree of emotional exhaustion and depersonalisation of the group with occupational calling, including the group who were willing to reselect a dentist as a job, appeared to be lower than the opposite group. However, the personal sense of accomplishment appeared to be higher than in the opposite group (*Table 4*).

Recently, many studies have highlighted the need to recognise the contribution of occupation-specific risk factors to stress and burnout. Compared with the average worker, as health professionals it is important for dentists to recognise the symptoms and the effects of stress on psychological and professional well-being. Therefore, professional calling or re-determination of a dentist as a job needs to be acknowledged and addressed for the well-being and satisfaction of dentists. Dentists have been singled out as the health-care professionals most likely to be subjected to severe stress, burnout, failed marriages, depression, substance abuse, and suicide. According to Laporta¹⁷, among dentists, oral and maxillofacial surgeons had high stress regarding coping skills, both adaptive and maladaptive.

As the professional calling and will of re-determination of a dentist as a job are related to job satisfaction, the study results are consistent with the results of Wolpin *et al.*¹⁸, in which the negative relationship

between job burnout and satisfaction was revealed. In some parts, the study result was also consistent with other study results in which a number of factors causing stress in dentists are present as a result of the surrounding environment, and other influences of overall society were revealed^{19,20}.

Despite the interesting results, this study had some limitations. The individual difference variables, such as individual personality variables, were not considered as antecedents of burnout. A future study will need to include personality variables to observe the effects of job-related variables on burnout, or the interactions between the job-related variables. Considering the methods of data collection, a cross-sectional design was implemented, in which data were collected at a single time point, and the results were derived by analysing the antecedents of burnout and result variables. Therefore, the causal relationship between those concepts could not be deduced. In particular, some scholars explained depersonalisation, which is one of the burnout components, as a coping mechanism for individuals experiencing emotional exhaustion^{8,21}. Therefore, this study has this limit in revealing the burnout process. A future study will need to compare the results of causal precedence with this study result based on a longitudinal study. Because the degree of burnout for non-respondents was not measured, and mutual sociodemographic and job-related characteristics between the respondents and non-respondents were not compared, it is possible that the degree of burnout was interpreted as one-sided in a positive direction. Despite these limitations, this is a worthwhile study because it prepared the base for improving job satisfaction by measuring and managing the degree of burnout in Korean dentists. Based on this study, further extensive and ongoing follow-up studies will be needed to create a better dental environment by managing the burnout of Korean dentists.

CONCLUSION

Sudden changes have been observed in Korean society, including those in medical and dental fields.

The survey results and the analysis of job burnout and job satisfaction in Korean private clinic dentists can be summarised as follows. Considering the subscales of burnout for respondents, the percentage with a high degree of emotional exhaustion and depersonalisation and with a low degree of personal sense of accomplishment, was 41.2%, 55.9%, and 41.4%, respectively. Korean dentists revealed a high rate of job burnout. Regarding emotional exhaustion, the differences in age and whether overnight work was performed were significant. For depersonalisation, the differences in age, marital status, years of practice,

and number of hours worked per week were significant. For personal sense of accomplishment, differences in gender, age, whether the dentists were residents, and in the number of hours worked per week were significant ($P < 0.05$). Overall, job burnout had a negative effect on job satisfaction. Through this in-depth study on the factors affecting job burnout, measures to improve the level of job satisfaction of Korean dentists and to manage job burnout can be developed.

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Conflict of interest

The authors declare that they have no competing interests.

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