



# Analysis of Factors Affecting the Quality of Work Life of Dental Hygienists Based on the Culture-Work-Health Model

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This study investigated the relationship between the organizational culture, organizational support, organizational health, personal health, and quality of work life of dental hygienists and analyzed the factors affecting the quality of work life in order to identify ways to improve their quality of work life. A total of 320 dental hygienists completed a self-administered survey; after excluding data from 21 respondents, 299 responses were included in the analysis. Frequency analyses, t-tests, one-way analysis of variation (ANOVA), and correlation analyses were conducted. A path analysis was also conducted to confirm the causal relationships. The findings are as follows. First, there was a significant difference in several general characteristics of the organizational culture including years in the current job and the number of dental hygienists; organizational support including age and the number of dental hygienists; organizational health including years in the current job and annual salary; and personal health including annual salary. Second, the quality of work life showed a positive correlation with organizational culture, organizational support, personal health, and organizational health in that order. Third, the results of path analysis revealed that organizational culture had a positive effect on organizational support; organizational support and personal health on organizational health; organizational support on personal health; and organizational support and organizational health on quality of work life. In addition, organizational support and organizational health had a direct effect on the quality of work life, while organizational culture, organizational support, and personal health had an indirect effect. These results indicated existence of a relationship among organizational culture, organizational support, organizational health, personal health, and quality of work life. It is necessary to identify ways to improve the quality of work life of dental hygienists.

**Key Words:** Culture-work-health model, Dental hygienists, Quality of life

## Introduction

The World Health Organization defines quality of life as an individual's perception of their position in the context of the culture and value systems in which they live in relation to their goals, expectations, standards, and concerns<sup>1)</sup>. The '2015 Quality of Life Report' by the Organization for Economic Cooperation and Development (OECD) objectively evaluated the quality of life. Korea ranked 29th among 36 countries in the level of individuals' satisfaction with life, scoring 5.80 points out of 10, which was below the average score of 6.58 points

among OECD countries<sup>2)</sup>. The National Statistical Office reported the nation's quality of life to be 5.7 points out of 10 in 2015<sup>3)</sup>, indicating that Koreans have a low quality of life.

For workers, the balance between work life and life outside work affects their satisfaction with life and themselves. A work-life balance in individuals can improve organizational productivity and significantly affect the stability of society<sup>4)</sup>. The aspects of quality of life include work life, meaning that work life is an important factor related to the quality of life. Work life directly affects personal life. The term 'quality of work

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life' (QWL) has been used to assess the quality and satisfaction with work life and much research has been conducted on the factors related to QWL<sup>5)</sup>.

Among models developed to explain the QWL, a culture-work-health model has been developed to provide a deeper understanding of the influence of culture on etiologies related to organizational and personal stress. The key factors of this model include management systems from structural and behavioral aspects, organizational health, workers' health, and QWL. The aspects of organizational culture include values, beliefs, and attitudes that determine behavioral objectives and methods<sup>6)</sup>. Organizational culture affects the management systems of behavioral factors, including worker communication patterns, manager decision-making style and method, worker level of control and autonomy, and levels of feedback and evaluation<sup>6)</sup>. The culture-work-health model is explained with a focus on the level of satisfaction with supervisors or co-workers, which can affect an organization or individual worker health. To identify the cultural factors that determine organizational and personal health, a conceptual basis of the model is provided based on the organizational unit culture, occupational stress, personal health, organizational health, and happiness<sup>6)</sup>. A study using this model to assess the quality of work life of nurses reported that organizational culture, organizational support, loss of productivity due to presenteeism, and worker health affect the QWL<sup>7)</sup>.

Dental hygienists are responsible for the behavioral management and preventive oral care services to prevent oral diseases and improve patient health<sup>8)</sup>. Hygienists are responsible for major tasks in oral care and their roles have been expanding in recent years. Dental hygienists' perception of their QWL is an important aspect of the quality of life and may be an important factor that significantly affects the quality and success of medical services and improves the competitiveness of a dental institution. Studies on the QWL of dental hygienists have only assessed job engagement<sup>5)</sup>, job satisfaction<sup>9)</sup>, and job stress<sup>9)</sup>; thus, research on the QWL is lacking. It is necessary to investigate dental hygienists' perceived QWL and to analyze the effects of organizational factors within dental clinics in which the dental hygienists work in

addition to personal and organizational health, on the QWL.

This study used a culture-work-health model to investigate the factors that affect the QWL of dental hygienists with an aim to increase the understanding of dental hygienists' QWL and to explore ways to improve it.

## Materials and Methods

### 1. Subjects

A total of 320 dental hygienists who worked in dental clinics in metropolitan area, Jeolla, and Chungcheong between December 1, 2016, and January 31, 2017, were selected by convenience sampling and surveyed using a structured questionnaire. The subjects were sufficiently explained about the purpose of this study. Those who voluntarily consented to participate were included as research participants. G\*Power 3.1 was used to calculate the sample size based on an effect size of 0.15, level of statistical significance of 0.05, and test power of 0.95. The sample size was calculated to be 204 participants. Considering the withdrawal rate, a total of 320 questionnaires were distributed. After excluding 21 questionnaires that were not completed, a total of 299 questionnaires were used in the final analysis.

This study was approved by the Institutional Review Board of Namseoul University (NSU-161115-08) and was conducted in compliance with the approval standard.

### 2. Tools

#### 1) Organizational culture

The Organizational Culture Survey developed by Glaser et al.<sup>10)</sup> and translated/revised by Kim<sup>11)</sup> was used to assess the organizational culture. This tool consists of 20 questions; four questions on teamwork, four questions on morality, three questions on information flow, four questions on employee participation, three questions on supervision, and two questions on customer service. These questions were revised by our researchers to make them easier for dental hygienists to read and understand. Each question was measured on a five-point Likert scale. Higher scores indicated a more positive organizational

culture. The Cronbach's  $\alpha$  of this tool was 0.96 in Kim's study<sup>11)</sup> and 0.89 in the present study.

**2) Organizational support**

A tool developed by O'Driscoll et al.<sup>12)</sup>, and translated/revised by Kim<sup>11)</sup> was used to assess organizational support. It consisted of eight questions; four questions each on supervisor support and co-worker support. Each question was rated on a five-point Likert scale, with one point assigned for "I did not get any support" and five points for "I received support all the time." Higher scores indicated higher perceived levels of organizational support. The Cronbach's  $\alpha$  of this tool was 0.95 in Kim's study<sup>11)</sup> and 0.79 in the present study.

**3) Organizational health**

SPS-6, which is a shortened version of the Stanford Presenteeism Scale (SPS) developed at the Stanford University School of Medicine, was used to assess organizational health<sup>13)</sup>. It contains six questions asking how significantly health problems in the past affected work performance. Each question was rated on a five-point Likert scale, with one point assigned for "always" and five points for "never" through recoding. Higher scores indicated less work loss and better organizational health. The Cronbach's  $\alpha$  of this tool was 0.83 in Koopman et al.'s study<sup>13)</sup>, and 0.74 in the present study.

**4) Personal health**

A single question developed by Ware<sup>14)</sup> was used to assess self-rated current health. The question, "In general, how would you rate your current health?", was rated on a five-point Likert scale, with one point assigned for "very unhealthy" and five points for "very healthy". Higher scores indicated better-perceived health.

**5) QWL**

A QWL assessment tool for dental hygienists developed by Kwon<sup>15)</sup> was used to assess their QWL. It consisted of 20 questions across seven subdomains; two questions on salary, four on welfare, four on educational training and employee development, two on interpersonal relation-

ships, two on leisure activities, two on social benefits, and four on employment stability. Each question was rated on a five-point Likert scale, with one point assigned for "not at all" and five points for "very true". Higher scores indicated better QWLs. The Cronbach's  $\alpha$  of this tool was 0.75 in Kwon's study<sup>15)</sup> and 0.82 in the present study.

**3. Statistical analysis**

The general characteristics of the participants were analyzed using descriptive statistics and frequency analysis. A Cronbach's  $\alpha$  was calculated for each assessment tool to test its reliability. Differences in organizational culture, organizational support, organizational health, personal health, and QWL according to the general characteristics were analyzed by t-tests and one-way analysis of variance (ANOVA). Pearson's correlation coefficients were calculated to assess any correlations among them. A path analysis was performed to analyze the causal relationships. A goodness-of-fit index was calculated to verify the path analysis results. Maximum likelihood analysis was used to test statistical significance. PASW Statistics for Windows ver. 18.0 (IBM Co., Armonk, NY, USA) and AMOS 18.0 (Amos Develop-

**Table 1.** General Characteristics of the Participants (n=299)

Characteristic	Category	Frequency
Age (y)	< 25	49 (16.4)
	25 ~ 29	107 (35.8)
	≥ 30	143 (47.8)
Marital status	Unmarried	185 (61.9)
	Married	114 (38.1)
Education	College	189 (63.2)
	Over university	110 (36.8)
Current work experience (y)	< 2	138 (46.2)
	2 ~ 4	76 (25.4)
	≥ 5	85 (28.4)
Annual salary (ten thousand Won)	< 2,000	26 (8.7)
	2,000 ~ 2,999	161 (53.8)
	≥ 3,000	112 (37.5)
Workplace	Local dental clinic	278 (93.0)
	Dental hospital	21 (7.0)
No. of dental hygienists	< 4	92 (30.8)
	4 ~ 10	135 (45.2)
	> 10	72 (24.1)

Values are presented as n (%). The sum of the percentages does not equal 100% because of rounding.

ment Co., Crawfordville, FL, USA) were used for all statistical analyses.

## Results

### 1. General characteristics

Table 1 showed the general characteristics of the participants. Ages of 30 years or older were the most common (47.8%), followed by those 25~29 years of age (35.8%) and less than 25 years of age (16.4%). More participants were unmarried (61.9%) than married. The majority of the participants (63.2%) had completed a three-year program, while 36.8% had completed a four-year program or more.

Years or work experience of fewer than two years was the most common (46.2%), followed by more than five

years (28.4%), and 2~4 years (25.4%) of experience. An annual salary of 20~30 million won was the most common (53.8%), followed by over 30 million (37.5%) and less than 20 million (8.7%) won. Most participants (93.0%) worked in dental clinics. Among the numbers of dental hygienists, 4~10 was the most common (45.2%), followed by four or less (30.8%) and 10 or more (24.1%).

### 2. Differences in organizational culture and support according to the general characteristics

Table 2 shows the differences in organizational culture and organizational support according to the general characteristics. Regarding differences in organizational culture according to the general characteristics, significant differences were found in the years of experience in the current job ( $p=0.03$ ) and the number of dental hygienists

**Table 2.** Organizational Culture and Organizational Support according to the General Characteristics

Characteristic	Organizational culture			Organizational support		
	Mean±SD	F/t	p	Mean±SD	F/t	p
Age (y)						
< 25	3.54±0.62	0.43	0.65	3.63±0.79 <sup>a</sup>	3.65	0.03*
25~29	3.45±0.74			3.36±0.82 <sup>a,b</sup>		
≥30	3.51±0.69			3.28±0.73 <sup>b</sup>		
Marital status						
Unmarried	3.49±0.69	0.01	0.98	4.41±0.80	1.36	0.18
Married	3.49±0.70			3.29±0.74		
Education						
College	3.50±0.63	0.41	0.68	3.40±0.75	0.75	0.45
Over university	3.47±0.80			3.32±0.83		
Current work experience (y)						
< 2	3.48±0.72 <sup>a</sup>	3.45	0.03*	3.40±0.86	1.24	0.29
2~4	3.36±0.74 <sup>a,b</sup>			3.25±0.70		
≥5	3.64±0.59 <sup>b</sup>			3.42±0.72		
Annual salary (ten thousand Won)						
< 2,000	3.51±0.74	1.96	0.14	3.53±0.68	0.68	0.51
2,000~2,999	3.42±0.68			3.33±0.81		
≥3,000	3.59±0.69			3.38±0.77		
Workplace						
Local dental clinic	3.48±0.70	-1.18	0.25	3.37±0.79	0.43	0.67
Dental hospital	3.65±0.64			3.30±0.61		
No. of dental hygienists						
< 4	3.41±0.74 <sup>a</sup>	3.78	0.02*	3.25±0.83 <sup>a</sup>	3.40	0.04*
4~10	3.45±0.66 <sup>a</sup>			3.33±0.74 <sup>a</sup>		
> 10	3.68±0.66 <sup>b</sup>			3.56±0.77 <sup>a</sup>		

SD: standard deviation.

\* $p < 0.05$ .

<sup>a-c</sup>The same superscript letter indicates no significant difference ( $p > 0.05$  by Scheffe post-hoc test).

( $p=0.02$ ). In a Scheffe post-hoc test performed to identify differences among groups of participants, significant differences in organizational culture were observed between participants with over four years of work experience and participants under 2 years of work experience, and between participants with over 10 dental hygienists, those with 10 or less dental hygienists in their workplaces.

Regarding differences in organizational support according to the general characteristics, significant differences in age ( $p=0.03$ ) and the number of dental hygienists ( $p=0.04$ ) were observed. In a Scheffe post-hoc test performed to identify differences between groups of participants, significant differences in the level of organizational support were found between participants aged less than 25 years and those aged 30 years or older,

and between participants with three dental hygienists and those with 10 or more dental hygienists in their workplaces.

### 3. Differences in organizational health, personal health, and QWL according to general characteristics

Table 3 shows the differences in organizational culture and organizational support according to the general characteristics of the dental hygienists. No significant difference in the QWL was observed according to the general characteristics. Among the variables included in organizational health, years of work experience at the current workplace ( $p=0.01$ ) and annual salary ( $p=0.03$ ) showed significant differences according to the general characteristics. In a Scheffe post-hoc test performed to

**Table 3.** Organizational Health, Personal Health, and Quality of Work Life (QWL) according to General Characteristics

Characteristic	Organizational health			Personal health			QWL		
	Mean±SD	F/t	p	Mean±SD	F/t	p	Mean±SD	F/t	p
Age (y)									
< 25	3.25±0.47	0.81	0.45	3.22±0.90	0.19	0.83	3.06±0.57	1.37	0.26
25 ~ 29	3.33±0.52			3.21±0.83			3.15±0.60		
≥ 30	3.35±0.49			3.28±0.91			3.22±0.60		
Marital status									
Unmarried	3.30±0.49	-1.34	0.18	3.19±0.86	-1.32	0.19	3.16±0.61	-1.21	0.23
Married	2.39±0.52			3.33±0.89			3.22±0.57		
Education									
College	3.35±0.51	0.90	0.37	3.21±0.90	-1.06	0.29	3.16±0.58	-0.34	0.74
Over university	3.30±0.48			3.32±0.84			3.18±0.63		
Current work experience (y)									
< 2	3.30±0.49 <sup>a</sup>	4.70	0.01*	3.17±0.83	1.09	0.34	3.15±0.56	2.18	0.12
2 ~ 4	3.24±0.47 <sup>a,b</sup>			3.32±0.82			3.08±0.69		
≥ 5	3.46±0.52 <sup>b</sup>			3.32±0.99			3.27±0.56		
Annual salary (ten thousand Won)									
< 2,000	3.45±0.42 <sup>a</sup>	3.72	0.03*	3.46±0.86	3.28	0.04*	3.32±0.54	3.20	0.05
2,000 ~ 2,999	3.20±0.48 <sup>a</sup>			3.13±0.94			3.09±0.61		
≥ 3,000	3.40±0.54 <sup>a</sup>			3.37±0.77			3.24±0.58		
Workplace									
Local dental clinic	3.32±0.50	-0.59	0.57	3.23±0.89	-1.13	0.27	3.16±0.60	-0.12	0.22
Dental hospital	3.39±0.51			3.43±0.75			3.32±0.46		
No. of dental hygienists									
< 4	3.40±0.48	1.33	0.27	3.17±0.95	0.79	0.46	3.15±0.61	0.68	0.51
4 ~ 10	3.31±0.49			3.24±0.85			3.14±0.63		
> 10	3.28±0.53			3.35±0.84			3.24±0.51		

SD: standard deviation.

\* $p < 0.05$ .

<sup>a-c</sup>The same superscript letter indicates no significant difference ( $p > 0.05$  by Scheffe post-hoc test).

identify differences among groups, participants with over four years of work experience at their current workplace had higher levels of organizational health than those with less than two years of experience. Participants with annual salaries of over 30 million Won had higher levels of organizational health than those with annual salaries below 20 million Won. Significant differences in the level of personal health were also observed according to annual salary ( $p=0.04$ ). No significant difference in the level of personal health was found according to annual salary between different groups.

4. Correlations between organizational culture, organizational support, organizational health, personal health, and QWL

Table 4 shows the correlations between the variables. Organizational culture was positively correlated with organizational support ( $r=0.746$ ,  $p<0.01$ ), organizational health ( $r=0.243$ ,  $p<0.01$ ), personal health ( $r=0.309$ ,  $p<0.01$ ), and QWL ( $r=0.616$ ,  $p<0.01$ ). Organizational support was positively correlated with personal health ( $r=0.295$ ,  $p<0.01$ ), and QWL ( $r=0.503$ ,  $p<0.01$ ), but not with organizational health. Organizational health was significantly correlated with personal health ( $r=0.179$ ,  $p<0.01$ ) and QWL ( $r=0.298$ ,  $p<0.01$ ). Personal health was significantly correlated with QWL ( $r=0.383$ ,  $p<0.01$ ).

5. Research model verification

1) Model fit test

Table 5 shows the fit indices of the model. The goodness of fit index (GFI) and adjusted GFI (AGFI), which are absolute indices of fit, were 0.882 and 0.838, respectively. The root mean square residual (RMR) and root mean square area of approximation (RMSEA) were 0.041 and 0.087, respectively. The normed fit index (NFI) and incremental fit index (IFI), which are incremental fit indices, were 0.866 and 0.903, respectively. The Tucker Lewis index (TLI) and comparative fit index (CFI) were 0.880, and 0.902, respectively. Overall, all indices were close to the acceptable ranges; thus, the model was deemed fit.

2) Analysis of the significance of the path coefficients and the effects of the research model

The results of the path analysis for the model are shown in the path model in Fig. 1. Table 6 shows the pathway coefficients. The model was significant in six paths. Organizational support was associated with organizational culture in the positive direction with an explanatory power of 92%, meaning that the better the organizational culture, the higher the organizational support ( $\beta=0.957$ ,  $p<0.001$ ). Organizational health was associated with personal health and organizational support in the positive direction. The

**Table 4.** Correlation between Organizational Culture, Organizational Support, Organizational Health, Personal Health, and Quality of Work Life (QWL)

	Organizational culture	Organizational support	Organizational health	Personal health
Organizational culture				
Organizational support	0.746**			
Organizational health	0.243**	0.096		
Personal health	0.309**	0.295**	0.179**	
QWL	0.616**	0.503**	0.298**	0.383**

\*\* $p<0.01$ .

**Table 5.** Model Fit

$\chi^2$ (p)	GFI	AGFI	RMR	RMSEA	NFI	IFI	TLI	CFI
363.166 (<0.000)	0.882	0.838	0.041	0.087	0.866	0.903	0.880	0.902

GFI: goodness of fit index, AGFI: adjusted GFI, RMR: root mean square residual, RMSEA: root mean square area of approximation, NFI: normed fit index, IFI: incremental fit index, TLI: Tucker Lewis index, CFI: comparative fit index.

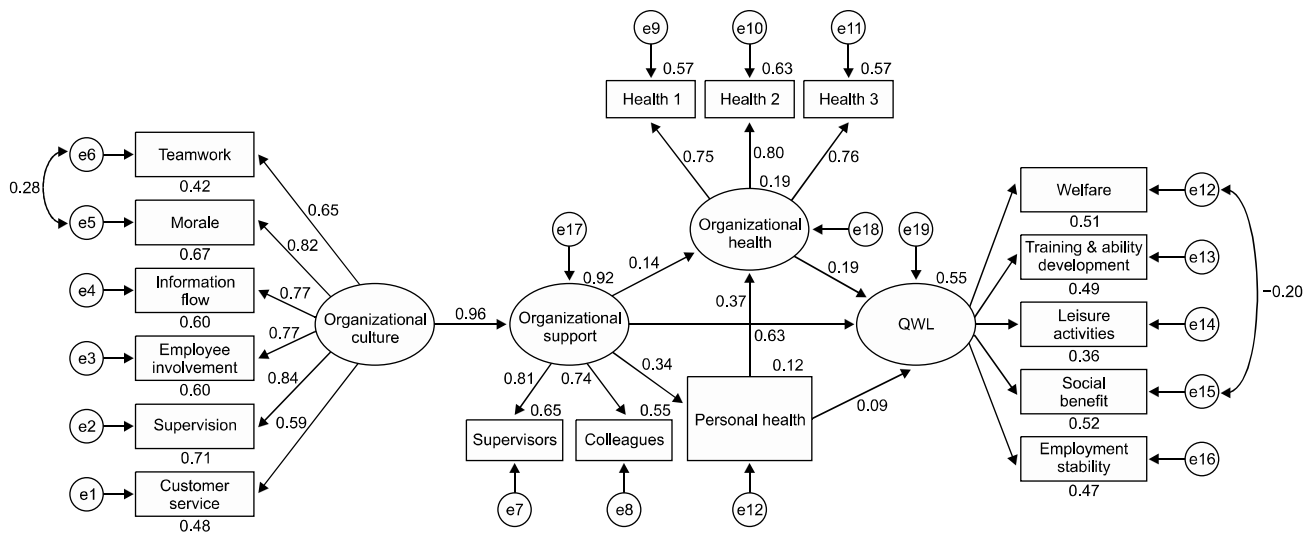


Fig. 1. Path analysis. QWL: quality of work life.

Table 6. Model Path Coefficients

Path	$\beta$	B	SE	CR	p	SMC
Organizational support ← Organizational culture	0.957	0.988	0.087	11.415	< 0.001	0.92
Organizational health ← Organizational support	0.140	0.142	0.069	2.053	0.040	0.19
Organizational health ← Personal health	0.371	0.478	0.085	5.618	< 0.001	
Personal health ← Organizational support	0.343	0.271	0.048	5.593	< 0.001	0.12
Quality of work life ← Organizational support	0.625	0.574	0.069	8.376	< 0.001	0.55
Quality of work life ← Organizational health	0.192	0.174	0.057	3.039	0.002	
Quality of work life ← Personal health	0.089	0.059	0.038	1.559	0.119	

$\beta$ : standardized estimate, B: estimate, SE: standard error, CR: critical ratio, SMC: squared multiple correlation.

Table 7. Direct, Indirect, and Total Effects of Path Model

	Direct effect $\beta$ (p)	Indirect effect $\beta$ (p)	Total effect $\beta$ (p)
Quality of work life			
Organizational culture		0.676 (0.004)	0.676 (0.004)
Organizational support	0.625 (0.004)	0.082 (0.004)	0.707 (0.004)
Organizational health	0.192 (0.020)		0.192 (0.020)
Personal health	0.089 (0.195)	0.071 (0.014)	0.161 (0.020)

higher the level of organizational support ( $\beta=0.140$ ,  $p=0.040$ ) and the better the personal health ( $\beta=0.371$ ,  $p < 0.001$ ), the better the organizational health. The explanatory power for this relationship was 19%. Personal health was associated with organizational support in the positive direction with an explanatory power of 12%, meaning that the higher the level of organizational support, the better the personal health ( $\beta=0.343$ ,  $p < 0.001$ ). The QWL was associated with organizational

support, organizational health, and personal health in the positive direction. The higher the level of organizational support ( $\beta=0.625$ ,  $p < 0.001$ ) and the better the organizational health ( $\beta=0.192$ ,  $p=0.002$ ), the higher the QWL. Organizational culture, organizational support, organizational health, and personal health explained the QWL at an explanatory power of 55%.

Table 7 shows the direct, indirect, and total effects of the variables. The total and indirect effect of organiza-

tional culture on the QWL was 0.676 ( $p=0.004$ ). The total, direct, and indirect effects of organizational support on the quality of life were 0.707 ( $p=0.004$ ), 0.625 ( $p=0.004$ ), and 0.082 ( $p=0.004$ ), respectively. The total and direct effect of organizational health was 0.192 ( $p=0.020$ ). The total, direct, and indirect effects of personal health were 0.161 ( $p=0.020$ ), 0.089 ( $p=0.195$ ), and 0.071 ( $p=0.014$ ), respectively. All effects were significant except for the direct effect of personal health. Therefore, the quality of life was indirectly affected by personal health, organizational support, and organizational culture and directly affected by organizational health and organizational support.

## Discussion

The QWL of dental hygienists, who spend a large amount of time in dental clinics, is closely associated with the quality of life and also affects the quality of treatments and medical services. The QWL of dental hygienists is determined by how satisfied they feel about their job in relation to job security and personal development during their period of employment at a dental institution. The present study was conducted to investigate differences in the QWL of dental hygienists working in dental clinics and to identify the factors that affect their QWL.

Significant differences in the QWL were found according to the general characteristics of the dental hygienists. Kwon and Bae<sup>5)</sup> and Oh and Kim<sup>9)</sup> reported that the QWL increases with monthly income. This was contrary to the results of this study. This discrepancy may be attributed to the different compositions of respondents. In this study, 52.2% of the participants were in their 20's, whereas the proportions were 92% and 76.8% in Kwon and Bae's study<sup>5)</sup> and Oh and Kim's study<sup>9)</sup>, respectively. Considering that people in their 20's receive lower salaries compared to those in their 30's, salary may be perceived as an important factor related to the QWL.

Regarding differences in organizational culture according to the general characteristics, significant differences were observed for the years of work experience and the number of dental hygienists. A more positive organizational culture was observed among participants

with four or more years of work experience at their current workplace and among those with 10 or more dental hygienists in their workplaces. This suggests that the longer one stays at the same job, the more familiar they become with the organizational culture of the workplace and the more positively they perceive it. It appears that the formation of a bond of empathy among dental hygienists affects the organizational culture. Although different tools were used, the results of the present study were consistent with those of Oh and Lee<sup>16)</sup>, in which the level of organizational culture increased as the number of dental hygienists increased.

Regarding differences in the level of organizational support according to the general characteristics, significant differences were observed for age and the number of dental hygienists. High levels of organizational support were observed among participants aged 30 years or older. Considering that most of these participants worked in dental clinics, they may have had many years of clinical experience, had higher-level positions, and were in charge of both administrative and medical tasks and, thus, may have received support from their supervisors and co-workers. This finding was consistent with the results of Han and Kim<sup>17)</sup>, in which subjects with more clinical experience, higher positions, and who worked in clinics had higher levels of organizational support.

Regarding differences in organizational health according to the general characteristics, higher levels of organizational health were observed among participants with more than four years of work experience in their current workplace and who had annual salaries over 30 million won. Participants with little work experience in their current workplace may feel dissatisfied with the rate at which they learn tasks and with their task performance, regardless of their work experience. This dissatisfaction can increase personal stress and cause health problems. In contrast, long-serving dental hygienists are more likely to have their performance acknowledged by others, feel pride about their jobs, and develop good intrapersonal relationships. These factors may have positively affected their personal health and, consequently, their organizational health. Cho and Lim<sup>18)</sup> reported that conflicts and stress related to work, interpersonal relationships, and



organizational environment can be actively resolved through the support of others.

Significant differences in the level of personal health according to annual salary were also observed. Most participants with higher annual salaries were long-serving dental hygienists. They become physically exhausted more quickly compared to relatively new dental hygienists when performing the same task and tended to care more about their personal health<sup>19)</sup>. This may be because those with higher salaries have the financial ability to manage their personal health. Although there was no difference in the annual salaries between this study and that of Park and Yoon<sup>20)</sup> and that the participants aged 35 years or older had higher levels of personal health in this study, its results are quite consistent with the latter, in which the subjects showed more interest in health behaviors after losing confidence in their health.

In the correlational analysis of organizational culture, organizational support, organizational health, personal health, and QWL, organizational culture was significantly correlated with organizational support, organizational health, personal health, and QWL. The higher the level of organizational culture, the higher the organizational support and the QWL. The QWL was significantly correlated with organizational culture, organizational support, personal health, and organizational health in that order. However, as organizational support was not significantly correlated with organizational health, additional investigation is needed in this regard.

Based on the structural model of this study, organizational culture was positively associated with organizational support, organizational support and personal health were positively associated with organizational health, and organizational support was positively associated with personal health. Organizational support, organizational health, and personal health were positively associated with the QWL.

The QWL is indirectly affected by personal health, organizational support, and organizational culture and directly affected by organizational health and organizational support. Organizational support had direct and indirect effects on the QWL. This is consistent with Kim and Ryu's report<sup>7)</sup> that the QWL increases with the

perceived level of organizational support. Organizational support affected personal health. This is consistent with Jeon et al.'s study<sup>21)</sup> in which nurses' perceived level of health and organizational support were significantly correlated.

Based on these results, organizational support affects the QWL of dental hygienists both directly and indirectly and may, thus, be used as an effective method of intervention for improving the QWL of dental hygienists. Organizational culture indirectly affected the QWL. This finding is consistent with that of Kim and Ryu<sup>7)</sup>. Although the direct effects of personal health on the QWL were not significant, the former significantly and indirectly affected the latter. Although to our knowledge no studies have investigated the effects of personal health on the QWL among dental hygienists, the results of this study are qualitatively similar those of Kim<sup>22)</sup>, in which the level of satisfaction with the quality of life increased as the perceived level of health increased. They are also similar to Park and Yoon's finding<sup>20)</sup> that health promotion behaviors increase the quality of life. However, direct comparison is difficult since neither of these studies investigated the factors that directly affect the QWL.

The culture-work-health model focuses on the cultural factors of an organization that determine organizational and personal health. In this study, organizational culture affected organizational support and organizational support was personal health, organizational health, and the QWL. Furthermore, personal health affected organizational health and the QWL. Thus, organizational factors affect the QWL of dental hygienists. Of these, organizational culture plays an especially important role.

This study is meaningful in that it increased our level of understanding about the QWL of dental hygienists and identified ways to improve the QWL. However, since the sample selection mostly consisted of dental hygienists working in dental clinics, the results of this study cannot be generalized to the entire population of dental hygienists. Research including various types of dental institutions is needed. Furthermore, it is difficult to compare the results of this study to those of previous studies since the tools used to measure organizational culture and health had not previously been used for dental

hygienists. Therefore, qualitative research on dental groups and organizational cultures within dental clinics is necessary. To improve the QWL of dental hygienists, it is essential to establish a positive organizational culture and to provide healthy organizational support. Moreover, individual efforts to improve personal and organizational health are also needed in addition to organizational support.

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