RESEARCH ARTICLE

A Study on Occupational Stress and Coping, Turnover, Knowledge and Practice of Infection Control in Dental Hygienists of COVID-19

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Background: The importance of infection with COVID-19 is being emphasized in dentistry with high risks such as aerosols. The purpose of this study is to investigate the knowledge and practice of infection control, stress and coping, and turnover of dental hygienists.

Methods: Questionnaire was conducted knowledge and practice of infection control, occupational stress and coping, turnover. Survey data was investigated about 149 dental hygienists from February to March 2021 Data were analyzed t-test, ANOVA, Pearson's correlation using statistical programs of PASW Statistics ver. 21.0.

Results: Regarding occupational stress, relationship conflict was higher in the group with less than 2 years of experience ($p < 0.05$). Job anxiety, organizational system, inadequate compensation, and workplace culture were highly surveyed in the 3 to 5 year of experience. The group with more than 6 years of experience had the highest perception of lack of job autonomy ($p < 0.05$). The group with higher knowledge of infection control had lower mean inappropriate rewards and stress ($p < 0.05$). The group with high infection control performance had a lower average in items such as job instability, organizational system, inadequate compensation, workplace culture, and stress. And problem-focused coping ability was found to be high ($p < 0.05$). Infection control knowledge and performance were positively correlated (r=0.251, $p < 0.01$), infection control practice and stress were negatively correlated (r=−0.264, $p < 0.01$), and stress and emotional coping were positively correlated (r=0.367, $p < 0.01$). Stress was positively correlated with turnover rate (r=0.549, $p < 0.01$).

Conclusion: Infection control training was required to reduce occupational stress. Occupational stress was highly correlated with turnover, a holistic and systemic organizational operation and improvement of the quality of medical care were required to reduce stress.

Key Words: COVID-19, Dental hygienist, Infection, Occupational stress

Introduction

In dentistry, staff are constantly exposed to pathogens through blood, respiratory secretions, and contact with contaminated equipment. Biological matrices (gingival sulcus fluid, saliva, blood) and unsterilized surfaces excreted by communicable disease or carriers increase the risk of infection. It threatens the health of not only medical staff, but also patients and people visiting medical institutions due to the problem in the disinfection and sterilization process of medical instruments, medical staff without protective equipment, non-execution of staff training, etc[1]. Due to the recent spread of COVID-19, it has been emphasized that dental staff should perform cross-infection.

The main transmission route of COVID-19 novel infectious disease is airborne and droplet transmission caused by aerosols, which are closely related to dental care[2]. Symptoms include conjunctivitis, diarrhea, vomiting,

shortness of breath, sore throat, fatigue, and muscle pain, but there are asymptomatic patients.

Caution is required during dental treatment. It increases the risk of pneumonia, severe respiratory failure, septic shock, and death, especially in the elderly with chronic respiratory disease and cancer[3]. Therefore, thorough infection control is required during dental treatment. In the context of COVID-19, infection controllers should establish clinical protocols to be applied in the medical environment. In addition, the patient's saliva, material contamination, and the surface of dental devices must be managed in accordance with the infection control guidelines during treatment[4]. In most dental hospitals, infection control rooms are in operation. However, only 13% of dental clinics have infection managers or dental hygienists in charge of infection control[5]. If infection control tasks are not shared and training is not implemented, dental hygienists who perform infection control tasks may have problems with co-ordination of opinions in their relationships with their superiors and colleagues. And it can act as occupational stress by affecting the physical burden of work, fatigue, and job satisfaction.

In addition, dental hygienists are in the occupational group at risk of exposure to infectious diseases. This may increase mental stress in the process of job performance and affect patient treatment[6,7]. Therefore, it is necessary to be able to perform clinical infection control protocols based on sufficient knowledge about infection control, and to reduce the fear of infection risk and occupational stress when performing work. Occupational stress is a negative emotion that appears when one experiences inconsistency with values in the work environment and situation[8]. Excessive occupational stress makes it difficult to perform high-quality work by reducing the efficiency of work performance. It also causes conflicts within the organization and affects the effectiveness of the organization.

Dental hygienists are in a situation where they need to pay more attention to infection control and patient care due to COVID-19. The dental hygienist's occupational stress should be managed so that it does not act as a cause of deterioration in the quality of medical services and turnover. Medical institutions need a plan to reduce the stress of medical staff in order to maintain excellent manpower[9]. Occupational stress leads to a decrease in professional values and self-esteem of medical staff, and becomes an obstacle to autonomous job performance, and patients do not receive quality medical services. Hospitals and patients are both at a loss in that they cannot secure excellent manpower[10]. In addition, occupational stress is related to the will to commit with attachment to the organization. Therefore, it affects job performance and becomes a potential determinant of job turnover. When a job turnover occurs, new employees are hired and training for job performance is provided, which leads to time and material expenditures and lowers morale of fellow employees. In studies related to occupational stress, many negative results have been reported, such as job satisfaction affecting turnover intention, lowering personal life satisfaction, psychological anxiety increased, and lowering trust in patients[11]. Therefore, there is a need for measures to increase job satisfaction and reduce turnover by reducing factors affecting occupational stress.

Stress coping methods include active coping, such as problem-focused coping and social support, and passive coping, such as emotion-focused coping and wishful thinking. Active stress coping was investigated to partially mediate occupational stress and job satisfaction[12]. If the medical staff's occupational stress is evaluated and training on coping with stress is implemented, it will help to alleviate occupational stress.

Existing studies in the field of dental hygiene have been conducted on infection control activities, perceptions of patient safety culture[5,13], and the effects of emotional labor and job characteristics of dental hygienists on occupational stress and turnover intentions[14]. However, related studies in the context of COVID-19 are insufficient. Therefore, in this study, it is necessary to investigate infection control, occupational stress and coping of dental hygienists in the COVID-19 situation. Medical institutions need to reduce occupational stress as well as mental and physical health of medical staff by creating a work environment in preparation for the post Corona virus. We would like to suggest the need for related education so that the quality of medical care can be maintained and improved through research. In addition, we intend to provide the basic data necessary to find a

holistic and systematic organizational management plan.

Materials and Methods

1. Study population

The study was conducted between February to March 2021 after an explanation on the objectives of the study and the ethical considerations was provided to the candidates and a written consent for participation was obtained. Subjects included worked in clinical practice in 2020, while those who did not work in 2021 were excluded. The sample size calculated using G-power program ver. 3.1.9.2, with an effect size of 0.15, a significance level of 0.05, a power of 0.80, and a predictor variable of 4, the number of samples required was 129. A total of 155 people were investigated considering the dropout rate of 20%, and 149 participants were included in the final analysis.

2. Methods

The study was conducted as an online self-report questionnaire. A total of 74 questions consisted of 10 questions on COVID-19 related infection control knowledge, 10 questions on job performance, 22 questions on occupational stress, 24 questions on stress coping, 4 questions on turnover intention, and 4 questions on general characteristics (age, gender, final education, and work experience).

1) Infection control knowledge and practice

For infection control knowledge[15], 10 items were selected out of 25 items for clinical characteristics, transmission route, symptoms, treatment, diagnosis, and quarantine guidelines. Cronbach α was 0.65 in the previous study and 0.380 in this study. COVID-19-related infection control performance[15] is a questionnaire developed based on the wearing of personal protective equipment and infection prevention management at medical institutions, measured on a Likert 5-point scale. A higher score means higher performance. Cronbach α was 0.83 in the previous study and 0.833 in this study. A higher score indicates a higher level of knowledge and performance.

2) Occupational stress and coping with stress

Occupational stress[16] consisted of 4 questions about job demands, 4 questions about lack of job autonomy, 3 questions about relationship conflict, 2 questions about job instability, 2 questions about organizational system, 3 questions about inadequate compensation, and 4 questions about workplace culture. The Cronbach α of the previous study was 0.82 and this study was 0.920.

For the stress coping method[16], 24 items were used for active coping (problem-centered coping and social support-seeking coping) and passive coping (emotion-focused coping and wishful thinking). The Cronbach α of the previous study was 0.82 and this study was 0.837. It was measured on a 4-point Likert scale, the score means higher the stress and coping ability.

3) Turnover

Turnover intention Kim's[17] questionnaire was used, and it was measured on a 5-point scale. A higher score meant higher turnover intention. The previous study Cronbach α was 0.890 and this study was 0.875.

3. Analysis

Participants' general characteristics were analyzed with descriptive statistics. Differences in general characteristics, Infection control knowledge, performance, occupational stress, stress coping, and turnover intention were analyzed with t-test, ANOVA, and Spearman correlation. The statistical significance level was set to 0.05. Analyses were performed using the PASW Statistics version 21.0 (IBM Corp., Armonk, NY, USA) software.

Results

1. Knowledge and practice of infection control by general characteristics

The study subjects were 77 people (51.7%) under the age of 27, 108 people (72.5%) with a university degree or higher, 117 people (78.5%) at a dental clinic, and a total work experience of 3 to 5 years 57 (38.2%) were the most common. The level of COVID-19 knowledge was higher among those over 27 years of age (8.21±1.04), graduating from university or higher (8.27±0.98), dental clinic

(8.25±1.02), and those with 3 to 5 years of experience (8.32±0.86), but it was not statistically significant (p＞0.05). Infection control performance was higher among those aged 27 years or older (4.36±0.59) than those under the age of 27 years (4.16±0.55; p＜0.05) (Table 1).

2. Stress and coping by general characteristics, knowledge, and performance of infection control

Regarding stress and coping, the group under the age of 27 showed high levels of negative perception of work culture and coping with emotional stress (p＜0.05). As for stress by career, those with more than 6 years of experience had the highest perception of lack of job autonomy. And those with less than 2 years of experience had the highest relationship conflict. Those with 3 to 5 years of experience had the highest average in job instability, organizational system, inadequate compensation, and workplace culture and the overall stress average was also the highest. Also, emotional stress coping was high in the same group (p＜0.05). The group with high knowledge of infection control showed lower averages of Inappropriate compensation, stress average (p＜0.05). The group with high infection control performance showed lower averages of job instability, organizational system, inadequate compensation, workplace culture, and stress. And problem-focused coping ability was found to be high (p＜0.05) (Table 2).

3. Analysis of job turnover according to demographic characteristics, COVID-19 knowledge, and practice

The turnover rate was higher among those under the age of 27 (3.86±1.01) and those who graduated from university (3.81±0.96). Those with 3 to 5 years of experience showed higher turnover score (3.94±0.96) than those with more than 6 years of experience (3.26±1.15; p＜0.05) (Table 3).

4. Correlation analysis of infection control knowledge and practice, stress and coping, and turnover

Infection control knowledge and performance were positively correlated (r=0.251, p＜0.01), infection control practice and stress were negatively correlated (r=−0.264, p＜0.01), and stress and emotional coping were positive (r=0.367, p＜0.01). People with high stress had higher hopeful coping (r=0.222, p＜0.01). Stress was positively correlated with turnover (r=0.549, p＜0.01), emotional coping (r=0.367, p＜0.01), and wishful coping (r=0.222, p＜0.01). Infection control practice and occupational stress showed a negative correlation (r=−0.264, p＜0.01) (Table 4).

Table 1. Knowledge and Practice of Infection Control by General Characteristics

Characteristic	Number of participants	Knowledge	p-value	Practices	p-value
Age (y)			0.935		0.029
＜27	77 (51.7)	8.19±0.98		4.16±0.55	
≥27	72 (48.3)	8.21±1.04		4.36±0.59	
Educational background			0.821		0.616
College	41 (27.5)	8.17±1.09		4.30±0.66	
＞University	108 (72.5)	8.27±0.98		4.24±0.54	
Workplace			0.285		0.061
Dental clinic	117 (78.5)	8.25±1.02		4.21±0.59	
Dental hospital	32 (21.5)	8.03±0.96		4.43±0.49	
Total work experience (y)			0.490		0.292
≤2	50 (33.6)	8.18±1.10		4.25±0.57	
3～5	57 (38.2)	8.32±0.86		4.18±0.58	
≥6	42 (28.2)	8.07±1.01		4.37±0.57	

Values are presented as number (%) or mean±standard deviation.
By t-test, one-way ANOVA.

Table 2. Stress and Coping by General Characteristics, Knowledge, and Practice of Infection Control

Characteristic	Stress								Stress coping				
									Active response		Passive response		
	Job require-ments	Job autonomy	Relationship conflict	Job instability	Organ-izational structure	Inappro-priate com-pensation	Workplace culture	Total	Problem-focused coping	Pursuit of social support	Emotional coping	Wishful thinking	Total
Age (y)													
<27 (n=77)	3.38±0.67	2.61±0.51	2.32±0.73	1.86±0.84	2.25±0.86	2.26±0.87	2.47±0.88	2.40±0.42	2.87±0.46	2.96±0.46	2.51±0.47	2.96±0.46	2.82±0.34
≥27 (n=72)	3.36±0.67	2.68±0.49	2.19±0.64	1.83±0.87	2.09±0.71	2.03±0.77	2.13±0.85	2.34±0.38	3.00±0.46	2.96±0.51	2.30±0.54	2.92±0.58	2.79±0.38
p-value	0.815	0.400	0.269	0.830	0.214	0.090	0.020	0.378	0.091	0.954	0.011	0.645	0.586
Educational background													
College (n=41)	3.34±0.65	2.64±0.47	2.21±0.66	1.80±0.76	2.17±0.69	2.04±0.81	2.21±0.98	2.35±0.38	3.00±0.46	2.92±0.52	2.36±0.58	3.02±0.60	2.82±0.44
>University (n=108)	3.39±0.65	2.64±0.52	2.27±0.70	1.86±0.89	2.18±0.83	2.19±0.83	2.34±0.85	2.38±0.41	2.91±0.46	2.97±0.48	2.43±0.49	2.91±0.48	2.80±0.33
p-value	0.678	0.952	0.603	0.700	0.982	0.316	0.411	0.727	0.299	0.581	0.463	0.249	0.766
Workplace													
Clinic (n=117)	3.37±0.66	2.66±0.50	2.27±0.72	1.85±0.88	2.18±0.80	2.11±0.84	2.31±0.91	2.37±0.40	2.90±0.47	2.94±0.51	2.37±0.52	2.92±0.54	2.78±0.37
Hospital (n=32)	3.34±0.61	2.57±0.51	2.20±0.58	1.82±0.73	2.15±0.75	2.29±0.78	2.28±0.78	2.39±0.41	3.06±0.43	3.02±0.41	2.56±0.47	3.01±0.42	2.91±0.28
p-value	0.742	0.406	0.639	0.877	0.842	0.287	0.844	0.781	0.083	0.416	0.057	0.419	0.072
Total work experience (y)													
≤2 (n=50)	3.30±0.61	2.50±0.51	2.39±0.69	1.91±0.95	2.18±0.83	2.18±0.83	2.34±0.89	2.40±0.48	2.96±0.52	3.06±0.52	2.40±0.58	2.99±0.58	2.85±0.43
3~5 (n=57)	3.40±0.64	2.71±0.49	2.31±0.74	2.00±0.81	2.38±0.84	2.31±0.87	2.48±0.83	2.52±0.54	2.85±0.43	2.90±0.45	2.56±0.38	2.95±0.41	2.82±0.31
≥6 (n=42)	3.39±0.71	2.72±0.49	2.01±0.56	1.55±0.72	1.90±0.59	1.89±0.72	2.03±0.90	2.21±0.50	3.00±0.43	2.92±0.49	2.21±0.52	2.87±0.57	2.75±0.33
p-value	0.815	$0.046^{a<b, c}$	$0.022^{c<a, b}$	$0.028^{c<b}$	$0.011^{c<b}$	$0.044^{c<b}$	$0.039^{c<b}$	0.011	0.287	0.202	0.003	0.581	0.401
COVID-19 knowledge													
Lower group (n=79)	3.36±0.69	2.64±0.52	2.21±0.74	1.95±0.95	2.31±0.84	2.29±0.86	2.40±0.97	2.45±0.55	2.89±0.50	3.00±0.53	2.39±0.50	3.02±0.47	2.82±0.35
Upper group (n=70)	3.39±0.60	2.64±0.48	2.30±0.63	1.72±0.71	2.03±0.71	1.99±0.76	2.20±0.77	2.32±0.42	2.98±0.42	2.91±0.43	2.43±0.54	2.85±0.55	2.79±037
p-value	0.788	0.962	0.409	0.106	0.032	0.025	0.179	0.128	0.262	0.262	0.305	0.577	0.049
Infection control practices													
Lower group (n=47)	3.43±0.66	2.56±0.53	2.36±0.67	2.23±0.91	2.48±0.79	2.43±0.82	2.56±0.89	2.58±0.53	2.82±0.52	2.93±0.55	2.41±0.59	3.03±0.57	2.80±0.44
Upper group (n=102)	3.35±0.64	2.68±0.49	3.20±0.69	1.67±0.76	2.04±0.76	2.02±0.81	2.19±0.86	2.31±0.46	2.98±0.43	2.97±0.46	2.41±0.48	2.90±0.49	2.81±0.32
p-value	0.457	0.189	0.192	<0.001	0.002	0.005	0.018	0.002	0.046	0.652	0.973	0.148	0.796

Values are presented as mean±standard deviation.

[a,b,c]Means followed by different letters (Scheffé) are significantly different at α=0.05.

ANOVA (Scheffé test) and t-test for COVID-19 knowledge upper group (mean≥), COVID-19 practices upper upper group (mean≥).

Discussion

The purpose of this study was to analyze the effect of infection control knowledge and performance on occupational stress when a dental hygienist in charge of infection control at a dental medical institution performs his/her duties in a COVID-19 situation. And by analyzing the

Table 3. Analysis of Job Turnover according to Demographic Characteristics, COVID-19 Knowledge, and Practice

Characteristic	Turnover	p-value
Age (y)		0.038
＜27 (n=77)	3.86±1.01	
≥27 (n=72)	3.50±1.04	
Educational background		0.019
College (n=41)	3.36±1.18	
＞University (n=108)	3.81±0.96	
Workplace		0.677
Clinic (n=117)	3.67±1.07	
Hospital (n=32)	3.75±0.90	
Total work experience (y)		0.005[b>c]
≤2 (n=50)	3.75±0.91	
3∼5 (n=57)	3.94±0.96	
≥6 (n=42)	3.26±1.15	
COVID-19 knowledge		0.636
Lower group (n=79)	3.72±1.07	
Upper group (n=70)	3.64±1.01	
Infection control practice		0.017
Lower group (n=47)	3.98±0.96	
Upper group (n=102)	3.55±1.05	

Values are presented as mean±standard deviation.
[b,c]Means followed by different letters (Scheffe) are significantly different at α=0.05.

effect on job turnover along with coping with occupational stress, it was intended to provide basic data for reducing occupational stress of dental hygienists and reducing their turnover intentions.

The knowledge and practice of infection control were higher among those 27 years of age or older and those with 3 to 5 years of experience. As middle managers, they can be seen as a group with excellent abilities due to their experience in infection control. In the correlation analysis, it was confirmed that the higher the knowledge level of infection control, the higher the infection control performance and the lower the occupational stress. In Lee's study[18], it was also found that there was a positive correlation between awareness and performance of infection control.

In the infection control knowledge question, the cause, transmission route, and symptom index of COVID-19 were found to be high. Little was known about when the virus should be detected after exposure to COVID-19, and the sequence of maintaining distance and controlling infection. Therefore, in preparation for the post-coronavirus, infection control education on new infectious diseases was required. In particular, the importance of standard preventive measures for infection control, such as respiratory hygiene, cough etiquette, and safe injection procedures, was emphasized as guidelines to protect medical staff and patients[19].

The group with high performance in infection control had lower average organizational system, job anxiety and

Table 4. Correlation Analysis of Infection Control Knowledge and Practice, Stress and Coping, and Turnover

Variable	COVID-19 knowledge	Infection control practices	Stress	Problem-focused coping	Social support coping	Emotional coping	Wishful coping	Turnover
COVID-19 knowledge	1							
Infection control practices	0.251**	1						
Stress	−0.035	−0.264**	1					
Problem focused coping	0.182*	0.332	−0.047	1				
Social support coping	−0.019	0.137	−0.074	0.501**	1			
Emotional coping	0.042	0.042	0.367**	0.289**	0.191*	1		
Wishful coping	−0.121	−0.062	0.222**	0.353**	0.421**	0.488**	1	
Turnover	−0.052	−0.216**	0.549**	−0.204*	−0.042	0.254**	0.201*	1

*p＜0.05, **p＜0.01 by Pearson's correlation coefficient.

stress. Organizations that perform infection control well are being systematically operated, and as a result, dental hygienists have been able to confirm that job anxiety and stress are low.

In the nursing study on occupational stress, knowledge of infection control was correlated with stress, and the higher the infection control fatigue, the higher the occupational stress, which was like to the results of this study[20,21].

The group under the age of 27 had a high negative perception of workplace culture and a high level of emotional stress in coping with occupational stress. Jung et al.[22] also found that stress was high when the work experience was less than 4 years. This indicates that the perception of the workplace culture was negatively derived in a situation where work was carried out according to the work instructions of the superior. It is highly probable that they were perceived as being low in remuneration compared to the intensity of their work while performing various tasks such as infection control and patient management. In addition, it was found that the intensity of infection control tasks such as development of infection control guidelines, monitoring, employee training, and consultation was high[23]. It was confirmed that the performance of infection control work influence on occupational stress.

Those with more than 6 years of experience had high stress due to the lack of job autonomy. An administrative management system that can support infection control performance is essential, but there is no infection control evaluation regulation, so it is inevitable to have difficulty in dental infection control without the firm will of the head of the institution and the person in charge of infection contro[15]. Therefore, it is necessary for medical institutions to review systematic support for infection control and to seek to improve the quality of medical care.

For those with 3 to 5 years of experience, job instability, dissatisfaction with the organizational system, inadequate compensation, and negative perception of work culture were the highest. Coping with emotional stress was found to be high. In the previous study of Lee et al.[24] those with 1 to 3 years of experience had the lowest job satisfaction and the highest turnover intention. The higher the ability

to cope with stress, the higher the work performance, and the stable focus on work. In this study, it was investigated that negative coping such as emotional coping and wishful coping have a positive correlation with stress. The high-stress group should improve their ability to cope with stress in addition to improving job dissatisfaction factors. Appropriate stress coping training is required for employee stress reduction[25].

In this study, it was investigated that negative coping such as emotional coping and wishful coping have a positive correlation with stress. The high-stress group should improve their ability to cope with stress in addition to improving job dissatisfaction factors.

As a result of the analysis on job turnover, the group under the age of 27, university graduates, and those with 3 to 5 years of experience were the most highly surveyed. In a study on the influence of dental hygienists' turnover intentions[26], short-term workers had high occupational stress and a high correlation with turnover. There was a difference from this study in that the occupational stress of dental hygienists with college degrees was high. It was necessary to consider various influencing factors other than academic background.

In addition, since the issues of remuneration and promotion had a high influence on the intention to leave, fair compensation and improvement of the working environment were suggested[26]. A study on the effect of turnover of nurses in small and medium-sized hospitals[27] stated that factors related to the working environment and wages were not easy to solve, so a policy plan was required. Therefore, it was required to find a way to increase job satisfaction and stress coping ability at the individual level to increase the intention to work. From a long-term perspective, a policy improvement plan for the professional remuneration and working environment of dental hygienists was required. In a pandemic, the risk of dental infection, aerosolized virus, contaminated surface management, and air and environmental management have a significant impact on infection[28,29]. There is no legal regulation on infection control work and education of dental hygienists in charge of dental infection control work. It is necessary to establish countermeasures against the increase in the demand for infection control personnel.

In preparation for the post-coronavirus, it was necessary to identify the current status of infection control and review the improvement plans for job turnover due to work stress such as overwork even in a pandemic situation, and the subsequent medical quality problems.

This study was meaningful in conducting a study on infection control knowledge and performance, occupational stress and turnover intention of dental hygienists who need to protect not only themselves, but also medical staff and patients from infection in the context of COVID-19. However, there is a limit to generalizing the research results because the proportion of people with a lot of work experience is not high, and the proportion of workers in dental clinics is high. In carrying out related research in the future, it is necessary to systematize infection control in the post-COVID situation through qualitative research on the recognition and support of the importance of infection control by medical staff. At the same time, it was necessary to increase the job satisfaction of medical staff and improve the quality of medical care through holistic and systematic organizational operation.

Notes

Conflict of interest

No potential conflict of interest relevant to this article was reported.

Ethical approval

This study was approved by the Institutional Review Board of Konyang University (IRB No. KYU-2020-210-01).

Author contributions

Conceptualization: Hye-Rin Kwon, Ga-Bin Park, and Seol-Hee Kim. Data acquisition: Hye-Rin Kwon, A-Young Gil, Ji-Min Kim, Ji-Seon No, Ga-Bin Park, Ji-Yune Oh, Na-Kyung Lee, and Seol-Hee Kim. Formal analysis: Seol-Hee Kim. Funding: Not applicable. Supervision: Seol-Hee Kim. Writing-original draft: Seol-Hee Kim. Writing-review & editing: Seol-Hee Kim.

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