

Effects of Depressive Mood and Stress Caused by COVID-19 on Subjective Health Status and Quality of Life

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ABSTRACT

The aim of the study is to investigate the effect of depressive mood and stress caused by COVID-19 on the subjective health status and quality of life of health care workers. The number of study subjects required for the study was 111 subjects based on the statistical evaluation method (G*power), and 122 subjects were selected considering the dropout rate of 10%. 110 copies, excluding incomplete responses, were finally confirmed as the targets for data analysis. SPSS WIN 21.0 statistical program was used to analyze the research problems and hypotheses presented in this study. The average perceived stress over the past month was 2.98 ± 1.07 points for health care workers and 2.85 ± 1.11 point for ordinary persons. The average degree of depression over the past week was 1.76 ± 0.805 points for health care workers and 1.73 ± 0.789 points for ordinary persons. As a result of performing multiple regression analysis using EQ5D as the dependent variable, the quality of life significantly decreased as the stress increased and as the subjective health level worsened ($p > 0.005$). Through these results, the study aims to provide basic data on the provision of psychological and emotional support services that can improve the psychological well-being and quality of life and reduce stress of health care workers.

Keywords: COVID-19; Depression; Quality of Life; Stress; Subjective Health Status

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INTRODUCTION

On January 20, 2020, the first coronavirus disease-19 (COVID-19) patient occurred in Korea. Since then, as the number of patients has increased, social and economic activities

of many people have contracted and the social depressive phenomenon has spread (Kim JY *et al.*, 2020; Kim SY, 2020). In turn, a newly coined word “corona blue,” a word created by adding “coronavirus” and “blue,” meaning depression, also emerged. People have been complaining of depressive mood, anxiety and stress as the period of social isolation continued to extend (Choi, E. *et al.*, 2020; Ibáñez-Vizoso, J. E. *et al.*, 2020). The current government is also making efforts to manage the stress of the people caused by this situation (National Trauma Center, 2020; Choi J. Y., 2020). The quality of life is also falling due to COVID-19. According to the 'Consumer Experience Economy Survey' section released by Consumer Insight, a consumer survey agency, on March 17, 2020, the quality of life has fallen both in the evaluation of the past six months and the forecast for the next six months. People who are susceptible to stress during infectious diseases are at high risk of developing depression, and psychological sequelae can lead to psychiatric disorders if appropriate measures are not taken. As COVID-19 is prolonged in the world, respondents such as medical staff and public officials participating in the COVID-19 response are always at risk of exposing themselves and their families to risk, and it has been reported that mind-health care is necessary, due to such factors as experiencing exclusion from within the community (Kang, L. *et al.*, 2020; Bohlken, J. *et al.*, 2020). Therefore, the aim of the study is to investigate the effect of depressive mood and stress caused by COVID-19 on the subjective health status and quality of life of health care workers. Through these results, the study aims to provide basic data on the provision of psychological and emotional support services that can improve the psychological well-being and quality of life and reduce stress of health care workers

MATERIALS & METHODS

Research Subject

The number of study subjects required for the study was 111 subjects based on the statistical evaluation method (G*power), and 122 subjects were selected considering the dropout rate of 10%. The survey was conducted through an online Google survey. For initial subjects, a questionnaire was conducted targeting the acquaintances of the researchers, and then through receiving the recommendations of the acquaintances, the research subjects were recruited through snowball sampling. 110 copies, excluding incomplete responses, were finally confirmed as the targets for data analysis.

Research Method

The questionnaire composition for data collection is as follows. In order to measure and evaluate perceived stress and depression measures, a total of 10 questions with a 5-point Likert scale and a total of 20 questions with a 4-point Likert scale were composed. The tool used in the community health survey was used as a tool for evaluating the quality of life, and it consisted of a total of 15 questions, with 5 items with 3 questions each. SPSS WIN 21.0 statistical program was used to analyze the research problems and hypotheses presented in this study. The analysis procedure is as follows. First, a frequency analysis was performed to understand the general distribution of characteristics of respondents, and a chi-square analysis was performed by measuring the frequency and ratio of each category.

Second, an independent sample t-test was conducted to examine and test the descriptive statistics of the research variables. Third, multiple regression analysis was conducted using EQ-5D as the dependent variable.

RESULTS AND DISCUSSION

General characteristics

As shown in table 1, in general characteristics, significant variables were gender, age group, and average working hours per week, and there were no significant differences in academic background, working experience period, and monthly income. In gender, 67 women (94.4%) among health care workers were significantly higher, then it was in the order of ordinary persons 23 women (59.0%), 16 men (41.0%), and 4 men (5.6%) among health care workers ($p < 0.001$). In age group, ordinary persons aged 30-39 was significantly higher with 15 (38.5%), and among health care workers, 22 (31.0%) under the age of 29 were higher than that of other age groups ($p < 0.05$). In average working hours per week, 47 (66.2%) of health care workers working 40 to 52 hours a week showed significantly higher, and among ordinary persons, 18 workers (46.2%) working 40 hours to 52 hours a week, were significantly higher ($p < 0.05$).

Perceived stress over the past month

As shown in table 2, the average perceived stress over the past month was 2.98 ± 1.07 points for health care workers and 2.85 ± 1.11 point for ordinary persons, indicating high stress among health care workers. There were two items that appeared significantly. The first was "Have you become nervous and received stressed?", and it was significantly higher in the health care workers group, with 3.46 ± 1.08 points in the health care workers group and 2.87 ± 1.10 points in the ordinary persons group ($p < 0.05$). For "Have you ever felt overwhelmed with so much burden that you couldn't handle it?", it was significantly higher in the health care workers group with 2.74 ± 1.15 points and 2.18 ± 1.07 points in the ordinary persons group ($p < 0.05$).

Degree of depression over the past week

As shown in table 3, the average degree of depression over the past week was 1.76 ± 0.805 points for health care workers and 1.73 ± 0.789 points for ordinary persons, and health care workers showed significantly higher depression. The first significant item among the degree of depression was "I felt as good as everyone else", with health care workers 2.30 ± 0.818 points and ordinary persons 2.69 ± 0.731 points, which was significantly higher in ordinary persons ($p < 0.05$). The second item was "I felt hopeful for the future", where health care workers scored 2.00 ± 0.793 points and ordinary persons scored 2.36 ± 0.959 points, which was significantly higher in ordinary persons ($p < 0.05$). The third item was "I was happy", where health care workers scored 2.17 ± 0.810 points and ordinary persons scored 2.63 ± 0.970 points, which was significantly higher for ordinary persons ($p < 0.05$). The fourth item was "I enjoyed life", with health care workers 2.07 ± 0.851 points and ordinary persons 2.54 ± 0.996 points, which was significantly higher in ordinary persons ($p < 0.05$). The score of health care workers was significantly lower in the positive items

($p < 0.05$), and the score was high in the negative items.

Subjective health status

As shown in table 4, subjective health status was not significant, but the health care workers were very good and good in 9 (12.7%) and 29 (40.8%), respectively, and for ordinary persons, 5 people (12.8%) and 20 people (51.3%) were very good and good, respectively, indicating that ordinary persons thought they were healthier.

Multiple regression analysis using EQ5D as dependent variable

As shown in table 5, as a result of performing multiple regression analysis using EQ5D as the dependent variable, the quality of life significantly decreased as the stress increased and as the subjective health level worsened ($p > 0.005$).

Since the treatment of people with infectious diseases inevitably carries a risk of infection, not only patients, but also medical staff feel severe stress on infection and isolation. Xiang *et al* (Xiang, Y. T. *et al.*, 2020) pointed out the possibility of deteriorating psychological health due to COVID-19, and have suggested the necessity of various counseling. In this study, it was confirmed that health care workers had higher depressive mood and stress than ordinary persons, and their quality of life decreased. Kwon *et al* (Kwon DH *et al.*, 2020) also reported high depression, anxiety, and low quality of sleep by medical personnel who worked as the COVID-19 response team. In the absence of vaccines and treatments, anxiety about the outbreak of a secondary pandemic continues in Korea. The steady occurrence of new patients implies an ongoing need for health care workers. It is necessary to evaluate and confirm the physical and psychological burden of the health care workers to be put into the treatment of infectious diseases. In 2004, when SARS (severe acute respiratory syndrome) occurred, in a Canadian report, about 90% of the healthcare workers involved reported acute psychological symptoms (Chua, S. E., *et al.*, 2004). According to a Chinese study on COVID-19, about 1/2 of medical staff engaged in related medical care reported depressive mood and anxiety, and about 1/3 of medical staff reported insomnia (Lai, J. *et al.*, 2020).

CONCLUSION

In this study, the average perceived stress over the past month was 2.98 ± 1.07 points for health care workers and 2.85 ± 1.11 point for ordinary persons, indicating high stress among health care workers. The average degree of depression over the past week was 1.76 ± 0.805 points for health care workers and 1.73 ± 0.789 points for ordinary persons, and health care workers showed significantly higher depression. As a result of performing multiple regression analysis using EQ5D as the dependent variable, the quality of life significantly decreased as the stress increased and as the subjective health level worsened ($p > 0.005$). In conclusion, it was confirmed that health care workers had higher depressive mood and stress than ordinary persons, and their quality of life decreased. It is not possible to know the cause in detail only from the data analyzed in this study. However, in the fight against COVID-19 which has not yet ended, attention and consideration for the mental health status of health care workers are required, and it is necessary to approach the mental health

of health care workers, keeping in mind that there are differences between professional roles.

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Table 1: General Characteristics

Categories	Health care workers		Ordinary persons	
	N	%	N	%
Gender	p<0.001			
Male	4	5.6	16	41.0
Female	67	94.4	23	59.0
Age	p<0.05			
Under 30	22	31.0	4	10.3
30 ~ 39 years old	9	12.7	15	38.5
40 ~ 49 years old	20	28.2	7	17.9
50 years old or older	20	28.2	13	33.3
Education	p=0.209			
High school	14	19.7	9	23.1
College	16	22.5	3	7.7
University	30	42.3	22	56.4
More than graduate school	11	15.5	5	12.8
Employment period	p=0.522			
Less than 1 year	6	8.5	4	10.3
1 ~ 3 years under	12	16.9	11	28.2
3 ~ 5 years under	13	18.3	6	15.4
More than 5 years	40	56.3	18	46.2
Monthly income	p=0.056			
Less than 1 million won	0	0.0	3	7.7
1 million to less than 2 million won	22	31.0	12	30.8
2 million to less than 3 million won	31	43.7	12	30.8
3 million to less than 4 million won	15	21.1	7	17.9
More than 5 million won	3	4.2	5	12.8
Average working hours per week	p<0.05			
Less than 40 hours	20	28.2	12	30.8
40 ~ 52 hours	47	66.2	18	46.2
53 hours or more	4	5.6	9	23.1
Total	71	64.6	39	35.4

Table 2: Perceived stress over the past month

Unit: Mean ± SD

Categories	Health care workers(n=71)	Ordinary persons(n=39)	p-value
Have you ever been angry with something unexpected?	3.04±1.22	2.69±1.17	0.148
Have you ever felt out of control over important things in your life?	2.42±1.23	2.64±1.29	0.382
Have you become nervous and received stressed?	3.46±1.08	2.87±1.10	0.007

Have you ever felt confident in your ability to deal with personal problems?	3.18±0.83	3.15±0.99	0.869
Have you ever felt that things are going the way you want?	2.94±0.95	3.18±1.00	0.225
Have you ever felt that you couldn't handle everything you had to do?	2.59±1.10	2.38±1.18	0.361
Have you been able to control your nervousness and anxiety in everyday life?	3.14±1.06	3.28±1.17	0.521
Have you felt you know how things are going?	3.49±0.91	3.59±0.91	0.594
Have you ever been angry from something beyond your control?	2.79±1.13	2.51±1.21	0.241
Have you ever felt overwhelmed with so much burden that you couldn't handle it?	2.74±1.15	2.18±1.07	0.014
Total	2.98±1.07	2.85±1.11	-

5-point scale (1 point: Strongly disagree, 2 points: Disagree, 3 points: Neutral, 4 points: Agree, 5 points: Strongly agree)

Table 3: Degree of depression over the past week

Unit: Mean ± SD

Categories	Health care workers(n=71)	Ordinary persons(n=39)	p-value
I felt annoyed by something that wasn't usually annoying.	1.85±.856	1.64±.843	0.232
I didn't want to eat much	1.56±.770	1.56±.821	0.996
Even if a family member or friend helped me, I couldn't help but feel depressed.	1.73±.827	1.51±.790	0.179
I felt as good as anyone else.	2.30±.818	2.69±.731	0.013
It was difficult for me to focus my mind on what I was doing.	1.85±.856	1.90±.852	0.759
I was depressed.	1.87±.909	1.56±.852	0.084
Everything I did felt hard.	2.00±.941	1.69±.950	0.105
I felt hopeful for the future.	2.00±.793	2.36±.959	0.038
I thought my life was a failure.	1.41±.709	1.36±.743	0.731
I felt fear.	1.48±.734	1.49±.790	0.956
I could not sleep well.	1.73±.827	1.72±.759	0.928
I was happy.	2.17±.810	2.63±.970	0.009
I spoke less than usual.	1.83±.798	1.72±.793	0.488
I felt lonely.	1.73±.774	1.46±.682	0.070
People were unkind.	1.56±.712	1.41±.751	0.292
I enjoyed life.	2.07±.851	2.54±.996	0.016
I had burst into tears.	1.37±.660	1.18±.512	0.114
I felt sad.	1.59±.767	1.44±.718	0.300
I felt people hated me.	1.48±.843	1.23±.536	0.063
I couldn't get things done right	1.62±.851	1.51±.721	0.508
Total	1.76±.805	1.73±.789	-

4-point scale (1 point: Rarely (Under 1 day), 2 points: Sometimes (1-2 days), 3 points: Generally (3-4 days) 4 points: Mostly (5-7 days))

Table 4: Subjective health status

Unit: N(%)

Categories	Health care workers	Ordinary persons	Total
p value=0.466			
Very good	9(12.7)	5(12.8)	14(12.7)
Good	29(40.8)	20(51.3)	49(44.6)
Fair	29(40.8)	12(30.8)	41(37.3)
Bad	4(5.6)	2(5.1)	6(5.6)
Total	71(64.5)	39(35.5)	110(100.0)

Table 5: Multiple regression analysis using EQ5D as dependent variable

Categories	B	β	t	Significance probability
(Constant)	1.099		47.046	
Stress	-0.026	-0.293	-2.662	0.009
Depression	-0.015	-0.126	-1.14	0.257
Subjective health status ¹⁾	-0.019	-0.282	-3.203	0.002

1) very good – very bad(1-5)