



Original Article

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Risk Factors for Dysfunctional Thinking about COVID-19 among Nurses Caring for Patients with COVID-19

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Abstract

Background: This study aims to identify factors influencing dysfunctional thinking about coronavirus disease 2019 (COVID-19) among nurses who have experience caring for COVID-19 patients.

Methods: A survey was conducted on a total of 152 nurses nationwide from March 11 to March 19, 2024. Data were analyzed using descriptive statistics, independent t-test, χ^2 -test, or Fisher's exact test. Logistic regression analysis was performed to identify risk factors for dysfunctional thinking about COVID-19.

Results: There were 23 respondents (15.1%) with dysfunctional thinking about COVID-19. The posttraumatic growth score was 3.37 ± 1.14 . Risk factors influencing dysfunctional thinking about COVID-19 were age of 31 years or older (odds ratio [OR]=4.39, 95% confidence interval [CI]=1.30–14.87), chronic diseases of co-living family (OR=13.60, 95% CI=1.39–133.06), and nursing for confirmed patients within 1 month (OR=3.34, 95% CI=1.08–10.32).

Conclusions: This study identified risk factors that affect dysfunctional thinking about COVID-19 among nurses working in various-sized medical institutions in Korea. This is expected to be helpful for improving healthcare workers' psychosocial and environmental intervention during infectious disease pandemics in the future.

Keywords: COVID-19, Obsessive behavior, Psychological posttraumatic growth, Nurses

INTRODUCTION

Coronavirus disease 2019 (COVID-19) is a respiratory syndrome caused by SARS-CoV-2 infection that has spread rapidly around the world. The World Health Organization (WHO) declared a pandemic in March 2020, and South Korea downgraded the infectious disease classification of COVID-19 from level 1 to level 2 in April 2022 [1]. In May 2023, as the WHO lifted the 'Public Health Emergency of International Concern' for COVID-19, Korea also declared the end of the pandemic [2].

Personal hygiene has been emphasized since the COVID-19 pandemic, but this can increase the possibility of hypersensitivity, extreme behavior, obsessive-compulsive disorder, or worsen the disease [3]. Nurses reported anxiety, fear, stress, and depression about themselves, their family members, and acquaintances being infected or spreading COVID-19 [4]. This may lead to psychological obsession with COVID-19.

Obsession with COVID-19 refers to an individual's excessive and repetitive thoughts about COVID-19 [3]. Accordingly, a tool was developed to measure how much thoughts about

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COVID-19 occur while exposed to the ongoing COVID-19 pandemic [5]. This is an anxious thought that oneself or someone around oneself may be infected with COVID-19, and is related to anxiety, obsessive-compulsive disorder, and depression [6]. An international study reported that 19.4% of 248 doctors and nurses had problematic symptoms related to COVID-19 between October 2020 and May 2021 [7]. In a domestic study conducted on 137 nurses in August 2022, 14.6% were reported as potentially not thinking normally [8]. Although COVID-19 has been lowered to the 'alert' management level [2], healthcare institutions continued to receive confirmed COVID-19 cases. Therefore, nurses were exposed to COVID-19 at all times as they are performing COVID-19 infection control tasks in addition to their daily basic nursing duties. In other words, there is a need to identify factors affecting nurses' obsession with COVID-19, as they are likely to continue to treat COVID-19 patients even after the pandemic.

Posttraumatic growth (PTG) refers to positive psychological changes that an individual experiences after experiencing a traumatic event [9]. Most people who experience trauma do not show posttraumatic stress disorder, which is a negative outcome, and some show changes by experiencing PTG, which is a positive outcome [10]. In a domestic study, the PTG of nurses who cared for COVID-19 patients was 46.5 points out of 80 [11] and 37.0 points [12]. PTG may have positive effects on nurses who have experienced the COVID-19 pandemic, such as changes in cognition, interpersonal relationships, outlook on life, and optimism [13], which may affect the reduction of anxiety or fear of COVID-19 and thus reducing excessive and repetitive thoughts. However, the number of studies conducted is still small, and most studies were measured during the COVID-19 pandemic, so research is needed after the pandemic has ended.

Studies on obsession with COVID-19 or PTG are limited to a single hospital, making it difficult to generalize the results. In addition, it is thought that the degree of exposure to COVID-19 patients and the provision of protective equipment at each stage of the pandemic may differ depending on the type of medical institution. Therefore, this study was conducted to investigate the factors affecting post-pandemic obsession with COVID-19 among nurses working in medical institutions of various regions and sizes.

METHODS

Research design

This study was a descriptive research study that aimed to iden-

tify factors affecting obsession with COVID-19 among nurses who have experience caring for COVID-19 patients.

Participants

This investigation enrolled registered nurses from various clinical settings, including intensive care units, general wards, and emergency departments across national healthcare facilities. Eligible participants were those who had managed COVID-19 patients, comprehended the research objectives, and consented voluntarily to participate. Exclusion criteria included new nurses with less than 6 months of experience who were difficult to judge as being familiar with hospital work [14], nurses who had resigned from the medical institution at the time of the survey, and nurses in charge of education or administration who were not directly providing nursing care. A questionnaire was administered to 157 respondents, and a total of 152 respondents were analyzed after excluding five respondents with insufficient responses. In this study, the logistic regression model was finally calculated to have three significant independent variables, which met the requirement of 10 samples per independent variable, and the minimum sample size of 50 or more [15], therefore 152 was considered sufficient for the analysis.

Measures

General characteristics

General characteristics included sex, age, marital status, level of education, co-living family status and relationship, chronic diseases of the participants and cohabitant, length of employment, work area, hospital type, work unit, work shift type, and position.

Characteristics related to COVID-19 experience

Characteristics related to vaccination and diagnosis included mandatory COVID-19 vaccination, adverse reactions of vaccine, COVID-19 experience and symptoms, type and duration of isolation, and whether acquaintances were confirmed. Work-related characteristics included type of patient unit, number of COVID-19 patients and duration of nursing, unit transfer, COVID-19-related education before unit transfer, provision of adequate personal protective equipment, experience of caring emerging infectious diseases before COVID-19, willingness to participate in nursing emerging diseases in the future, turnover intention, and the experience of nursing for confirmed patients within 1 month.

Obsession with COVID-19 Scale

The Obsession with COVID-19 Scale (OCS), which was used to measure dysfunctional thinking, measures an individual's excessive and repetitive thoughts about COVID-19, and this study used a tool developed by Lee [5] and translated into Korean by Choi et al. [16]. Based on experiences over the past 2 weeks, the scale consists of four items, with a total score ranging from 0 (never) to 4 (almost every day for the past 2 weeks). The total score ranges from 0 to 16 and a higher score indicates more severe thoughts about COVID-19. A total score of 7 or higher indicates problematic symptoms and may require additional evaluation or treatment [16], which was defined as the dysfunctional thinking group in this study. This tool is made available to the public to encourage its use for clinical evaluation or research, and it is permitted to use the tool without official permission if the source is accurately cited. Cronbach's α in Lee [5] study was 0.83, and Cronbach's α in this study was 0.84.

Post-Traumatic Growth Inventory

The Korea-Post Traumatic Growth Inventory (K-PTGI), which was validated by Song et al. [9] based on the Post-Traumatic Growth Inventory (PTGI) developed by Tedeschi and Calhoun [13], was used for measurement with the approval of both the original developer and the translator. The K-PTGI consists of 16 items in total, including six items on 'change in self-perception,' five items on 'increased depth of interpersonal relationships,' three items on 'discovery of new possibilities,' and two items on 'increased spiritual and religious interest.' It is a self-report questionnaire that measures the degree to which an individual agrees with positive changes after a traumatic experience. Each item is rated on a 6-point Likert scale from 0 (I did not experience this change) to 5 (I experienced it very much) regarding the degree of positive change. The total score for the 16 items ranges from 0 to 80, with a higher score indicating a higher degree of growth. Cronbach's α was 0.92 in Tedeschi and Calhoun [13] study, and 0.94 in Song et al. [9] study, and in this study, Cronbach's α was 0.93.

Data analysis

The collected data were analyzed using the SPSS ver. 28 program (IBM Corp.). The general characteristics of the subjects, characteristics related to the COVID-19 experience, OCS, and PTG were identified using frequencies, percentages, means, and standard deviations. The general characteristics, characteristics related to the COVID-19 experience, and PTG according to the

two groups classified by whether the subjects' OCS scores were 7 or higher were analyzed using the t-test, χ^2 -test, or Fisher's exact test, and the variables with $P<0.1$ [17] were entered into multivariate logistic regression analysis to identify risk factors.

Data collection and ethical considerations

This study received approval from the Institutional Review Board of Asan Medical Center (No. 2024-0328). A nationwide survey was conducted from March 11 to March 19, 2024, using an online platform, targeting nurses across various hospitals. Participants, after understanding the study's aim and method via the recruitment notice, provided informed consent electronically. The data obtained from the self-administered questionnaire, which required approximately 10 minutes to complete, were processed anonymously and utilized only for research purposes. Participants were provided with beverage vouchers through non-face-to-face method.

RESULTS

Dysfunctional thinking about COVID-19 and posttraumatic growth

In this study, 23 participants (15.1%) were categorized into the dysfunctional thinking group based on a total score of 7 or higher on the OCS. PTG was measured overall at 3.37 ± 1.14 with subfactors including changed perception of self at 3.50 ± 1.18 , relationships with others at 3.46 ± 1.21 , new possibilities at 3.15 ± 1.45 , and spiritual-existential change at 3.06 ± 1.69 (Table 1).

Comparison of general characteristics by groups according to dysfunctional thinking about COVID-19

In the comparison between the COVID-19 obsession group and the normal group, there were significant differences in being

Table 1. Scores of dysfunctional thinking about COVID-19 and posttraumatic growth (N=152)

Variable	Value
Dysfunctional thinking about COVID-19	0.89±0.73
No	129 (84.9)
Yes	23 (15.1)
Posttraumatic growth	3.37±1.14
Changed perception of self	3.50±1.18
Relation to others	3.46±1.21
New possibilities	3.15±1.45
Spiritual-existential change	3.06±1.69

Values are presented as mean±standard deviation or number (%).

over 30 years old ($\chi^2=6.39$, $P=0.011$), marital status ($P=0.007$), co-living family with a chronic disease ($P=0.025$), and work shift type ($\chi^2=12.93$, $P=0.002$) (Table 2).

Comparison of COVID-19-related characteristics by groups according to dysfunctional thinking about COVID-19

There were statistically significant differences between the COVID-19 obsession group and the normal group in terms of

having received the mandatory COVID-19 vaccine ($P=0.015$), unit transfer ($P=0.018$), and nursing for confirmed patients within 1 month ($\chi^2=7.80$, $P=0.005$) (Table 3).

Comparison of posttraumatic growth by groups according to dysfunctional thinking about COVID-19

There was no statistically significant difference in the PTG scores between the COVID-19 obsession and the normal

Table 2. Comparison of general characteristics by groups according to dysfunctional thinking about COVID-19 (N=152)

Variable	Category	Total	Non-dysfunctional thinking (n=129)	Dysfunctional thinking (n=23)	t/ χ^2 (P)
Sex	Male	10 (6.6)	8 (6.2)	2 (8.7)	(0.648) ^a
	Female	142 (93.4)	121 (93.8)	21 (91.3)	
Age (yr)	≤30	83 (54.6)	76 (58.9)	7 (30.4)	6.39 (0.011)
	≥31	69 (45.4)	53 (41.1)	16 (69.6)	
Mean age (yr)		30.70±3.78			
Marital status	Yes	27 (17.8)	18 (14.0)	9 (39.1)	(0.007) ^a
	No	125 (82.2)	111 (86.0)	14 (60.9)	
Education	≤Bachelor	145 (95.4)	124 (96.1)	21 (91.3)	(0.286) ^a
	≥Master	7 (4.6)	5 (3.9)	2 (8.7)	
Co-living family	Yes	58 (38.2)	48 (37.2)	10 (43.5)	0.33 (0.569)
	No	94 (61.8)	81 (62.8)	13 (56.5)	
Parents	Yes	31 (20.4)	29 (22.5)	2 (8.7)	(0.166) ^a
	No	121 (79.6)	100 (77.5)	21 (91.3)	
Spouse	Yes	25 (16.4)	18 (14.0)	7 (30.4)	(0.066) ^a
	No	127 (83.6)	111 (86.0)	16 (69.6)	
Children	Yes	17 (11.2)	12 (9.3)	5 (21.7)	(0.141) ^a
	No	135 (88.8)	117 (90.7)	18 (78.3)	
Sibling	Yes	17 (11.2)	15 (11.6)	2 (8.7)	(1.000) ^a
	No	135 (88.8)	114 (88.4)	21 (91.3)	
Chronic diseases of respondents	Yes	6 (3.9)	4 (3.1)	2 (8.7)	(0.225) ^a
	No	146 (96.1)	125 (96.9)	21 (91.3)	
Chronic diseases of co-living family	Yes	5 (3.3)	2 (1.6)	3 (13.0)	(0.025) ^a
	No	147 (96.7)	127 (98.4)	20 (87.0)	
Total clinical career (yr)	<5	69 (45.4)	62 (48.1)	7 (30.4)	2.45 (0.118)
	≥5	83 (54.6)	67 (51.9)	16 (69.6)	
Current career (yr)	<3	88 (57.9)	77 (59.7)	11 (47.8)	1.13 (0.288)
	≥3	64 (42.1)	52 (40.3)	12 (52.2)	
Hospital type	Tertiary hospital	74 (48.7)	65 (50.4)	9 (39.1)	0.99 (0.320)
	General hospital	78 (51.3)	64 (49.6)	14 (60.9)	
Area	Seoul	87 (57.2)	71 (55.0)	16 (69.6)	2.09 (0.352)
	Metropolitan	45 (29.6)	41 (31.8)	4 (17.4)	
	Others	20 (13.2)	17 (13.2)	3 (13.0)	
Work unit	Medical ward	90 (59.2)	75 (58.1)	15 (65.2)	1.62 (0.805)
	Surgical ward	25 (16.4)	22 (17.1)	3 (13.0)	
	Emergency room	10 (6.6)	8 (6.2)	2 (8.7)	
	ICU	21 (13.8)	18 (14.0)	3 (13.0)	
	COVID isolation ward/ICU	6 (3.9)	6 (4.7)	0 (0.0)	
Work shift type	2-shift	12 (7.9)	6 (4.7)	6 (26.1)	12.93 (0.002)
	3-shift	135 (88.8)	118 (91.5)	17 (73.9)	
	Day shift	5 (3.3)	5 (3.9)	0 (0.0)	
Position	Staff nurse	140 (92.1)	120 (93.0)	20 (87.0)	(0.393) ^a
	≥Charge nurse	12 (7.9)	9 (7.0)	3 (13.0)	

Values are presented as number (%) or mean±standard deviation.

ICU, intensive care unit.

^aFisher's exact test.

Table 3. Comparison of COVID-19 related characteristics by groups according to dysfunctional thinking about COVID-19 (N=152)

Variable	Category	Total	Non-dysfunctional thinking (n=129)	Dysfunctional thinking (n=23)	t/χ^2 (P)
Mandatory COVID-19 vaccination	Yes	132 (86.8)	116 (89.9)	16 (69.6)	(0.015) ^a
	No	20 (13.2)	13 (10.1)	7 (30.4)	
Adverse reactions of vaccine	Yes	50 (32.9)	39 (30.2)	11 (47.8)	2.74 (0.098)
	No	102 (67.1)	90 (69.8)	12 (52.2)	
Experience of COVID-19	Yes	102 (67.1)	83 (64.3)	19 (82.6)	2.95 (0.086)
	No	50 (32.9)	46 (35.7)	4 (17.4)	
Symptoms of COVID-19	Yes	79 (52.0)	63 (48.8)	16 (69.6)	3.36 (0.067)
	No	73 (48.0)	66 (51.2)	7 (30.4)	
Types of isolation ^b (n=102)	Hospital	6 (5.9)	3 (3.6)	3 (15.8)	4.71 (0.095)
	Community treatment centers	3 (2.9)	2 (2.4)	1 (5.3)	
	Home	93 (91.2)	78 (94.0)	15 (78.9)	
Duration of isolation (day) ^b (n=102)		5.75±1.96	5.61±1.71	6.32±2.81	1.41 (0.161)
	≤5	72 (70.6)	59 (71.1)	13 (68.4)	0.05 (0.818)
	>5	30 (29.4)	24 (28.9)	6 (31.6)	
Confirmed case of acquaintance	Yes	87 (57.2)	73 (56.6)	14 (60.9)	0.15 (0.702)
	No	65 (42.8)	56 (43.4)	9 (39.1)	
Type of COVID-19 patient unit	Ward	89 (58.6)	77 (59.7)	12 (52.2)	4.86 (0.182)
	Emergency room	19 (12.5)	18 (14.0)	1 (4.3)	
	Intensive care unit	19 (12.5)	16 (12.4)	3 (13.0)	
	Community treatment centers	25 (16.4)	18 (14.0)	7 (30.4)	
Number of COVID-19 patients		10.42±6.42	10.30±6.25	11.09±7.37	0.54 (0.591)
Duration of nursing (mo)	<10	86 (56.6)	75 (58.1)	11 (47.8)	0.85 (0.358)
	≥10	66 (43.4)	54 (41.9)	12 (52.2)	
Unit transfer	Yes	16 (10.5)	10 (7.8)	6 (26.1)	(0.018) ^a
	No	136 (89.5)	119 (92.2)	17 (73.9)	
COVID-19 education before unit transfer	Yes	130 (85.5)	112 (86.8)	18 (78.3)	(0.332) ^a
	No	22 (14.5)	17 (13.2)	5 (21.7)	
Provision of adequate personal protective equipment	Yes	146 (96.1)	125 (96.9)	21 (91.3)	(0.225) ^a
	No	6 (3.9)	4 (3.1)	2 (8.7)	
Experience of caring emerging infectious disease	Yes	61 (40.1)	50 (38.8)	11 (47.8)	0.67 (0.414)
	No	91 (59.9)	79 (61.2)	12 (52.2)	
Willingness to participate in nursing emerging infectious disease	Yes	125 (82.2)	107 (82.9)	18 (78.3)	(0.562) ^a
	No	27 (17.8)	22 (17.1)	5 (21.7)	
Turnover intention	Yes	76 (50.0)	63 (48.8)	13 (56.5)	0.46 (0.497)
	No	76 (50.0)	66 (51.2)	10 (43.5)	
Nursing for confirmed patients within 1 month	Yes	48 (31.6)	35 (27.1)	13 (56.5)	7.80 (0.005)
	No	104 (68.4)	94 (72.9)	10 (43.5)	

Values are presented as number (%) or mean±standard deviation.

^aFisher's exact test. ^bThe results were from 102 respondents who were isolated, 83 in the non-dysfunctional thinking and 19 in the dysfunctional thinking.

groups for both the overall and subfactors (Table 4).

Risk factors for dysfunctional thinking about COVID-19

Logistic regression analysis was performed to identify factors affecting dysfunctional thinking. Age, marital status, chronic diseases of co-living family, mandatory COVID-19 vaccination, adverse reactions of vaccine, experience of COVID-19, types of isolation, unit transfer, and nursing for confirmed patients within 1 month, which were found to have significant differences at a significance level of <0.1 between the characteristics

of dysfunctional thinking, were entered using the backward LR (likelihood ratio) method. The regression model was statistically significant ($\chi^2=15.14$, $P=0.002$), and the explanatory power was 22.3% as a Nagelkerke coefficient of determination. Hosmer-Lemeshow test indicated that the model fit was good ($\chi^2=2.01$, $P=0.571$). The results of logistic regression analysis showed that age of 31 years or older (odds ratio [OR]=4.39, 95% confidence interval [CI]=1.30–14.87, $P=0.018$), chronic diseases of co-living family (OR=13.60, 95% CI=1.39–133.06, $P=0.025$), and nursing for confirmed patients within 1 month (OR=3.34,

Table 4. Comparison of posttraumatic growth by groups according to dysfunctional thinking about COVID-19 (N=152)

Variable	Non-dysfunctional thinking (n=129)	Dysfunctional thinking (n=23)	t (P)
Posttraumatic growth	3.33±1.17	3.57±0.99	-0.93 (0.353)
Changed perception of self	3.49±1.18	3.54±1.22	-0.17 (0.863)
Relation to others	3.42±1.24	3.70±1.03	-1.13 (0.267)
New possibilities	3.06±1.48	3.62±1.24	-1.71 (0.061)
Spiritual-existential change	3.02±1.74	3.28±1.36	-0.82 (0.420)

Values are presented as mean±standard deviation.

95% CI=1.08–10.32, $P=0.036$) were risk factors for dysfunctional thinking (Table 5).

DISCUSSION

In this study, the mean OCS score was 0.89. In previous studies using the same measurement tool, the mean OCS score ranged from 0.80 to 5.18 depending on the respondents and time of the survey [7,8,18]. Although it is difficult to conclude due to the limited number of studies, it is likely that the proportion of nurses with excessive and recurrent thoughts about COVID-19 decreased as the COVID-19 pandemic gradually moved from a pandemic to a management phase. In this study, 15.1% of the subjects had an obsession with COVID-19, that is, had dysfunctional thoughts, which was similar to the previous study's 14.6–19.4% [7,8,18]. In a previous study targeting healthcare workers and trainees [19], nurses had the highest score among medical personnel. This reflects the nature of their work that performs infection control in the healthcare setting and cares for patients most closely. Therefore, it is necessary to understand the work of nurses, periodically measure OCS scores, identify the proportion of nurses with excessive COVID-19 thinking, and provide psychological support and job transitions for them.

In this study, the average PTG score was 3.37, which was higher than the average total score of 2.91 [11], 2.41 [20], and 1.76 [12] converted to the average score of previous studies using the same measurement frequency. Most of the previous studies were surveys conducted until 2022, so it is thought to be different from the infection control situation in medical institutions right before the crisis stage in which this survey was conducted was downgraded from the alert stage to the concern stage [21]. An individual's basic belief system may have changed in the process of caring for a significant number of COVID-19 patients for a long period [22]. In addition, it is thought that the PTG score increased as the repeated difficult situations under the pandemic gave rise to a new perspective through reflection [22].

Table 5. Multivariate logistic regression analysis for the group with dysfunctional thinking about COVID-19 (N=152)

Variable	OR	95% CI	P-value
Age (yr)	1		
≤30	1 (reference)		
≥31	4.39	1.30–14.87	0.018
Chronic diseases of co-living family			
No	1 (reference)		
Yes	13.6	1.39–133.06	0.025
Nursing for confirmed patients within 1 month			
No	1 (reference)		
Yes	3.34	1.08–10.32	0.036

CI, confidence interval; OR, odds ratio.

As a result of analyzing the risk factors of the group with dysfunctional thinking through multivariate logistic regression analysis, age over 31 years, chronic diseases of co-living family, and nursing for confirmed patients within 1 month significant variables. In a previous study investigating the mental problems of healthcare workers [23], most of them included depressive symptoms, anxiety symptoms, and insomnia, and studies on obsession, which represents excessive thinking, were rare, making an accurate comparison difficult. In a previous study of the general population, the OCS score was higher in older people [18]. However, other studies targeting medical personnel did not reach significant conclusions about age [7,19]. Since previous studies were conducted during the COVID-19 pandemic and are thought to be different from this study conducted during the stabilization period, it is necessary to repeatedly study the OCS score according to the demographic characteristics of the subjects.

Although it was difficult to find studies that included the question of nursing for confirmed patients within 1 month, which was significant in the results of this study, there was a previous study that stated that nursing COVID-19 patients was correlated with obsessive thoughts, but no papers supporting this study result were found [7]. Most of the domestic and international studies were qualitative, asking nurses about their

experiences while caring for patients, so it was still difficult to find results to support group differences in OCS scores. A study [24] that investigated the mental wellbeing of nurses during the COVID-19 pandemic stated that directly caring for confirmed patients causes fear, but providing clear instructions, information, and protective equipment was a factor that reduced fear. Based on the results of a previous study that OCS is positively correlated with COVID-19 anxiety [16], it can be thought that anxiety about caring for COVID-19 patients causes fear. Therefore, it is important to provide adequate protective gear and updated guidance as appropriate when caring for COVID-19 patients. Furthermore, repeated studies on the relationship between patient care situations and OCS are needed.

In this study, the mean scores for all factors of PTG were higher in the group with dysfunctional thinking, but this was not statistically significant. It was difficult to find articles that studied the relationship between COVID-19 and PTG, and a previous study of the relationship between psychosocial wellbeing and OCS scores in nurses who experienced the COVID-19 pandemic reported that higher OCS scores were associated with poorer psychosocial wellbeing [8], which contradicts these findings. The PTG scores in this study were measured after the end of the pandemic, and it is possible that multiple factors, such as strengthened infection control guidelines in medical institutions and changes in individual beliefs, may have had a complex effect. There is some variation in sample size between the two groups, which may have led to an insufficient number of significant variables [22]. Future studies with larger sample sizes using both OCS and other psychosocial health measures are warranted to explore differences.

This study investigated demographic characteristics, COVID-19-related characteristics, obsession with COVID-19, and PTG of nurses working in various medical institutions nationwide. The limitation of this study is that it did not identify the influence of institutional characteristics and PTG on obsession with COVID-19. However, by examining obsession with COVID-19 during the routine phase of the pandemic, this study provides foundational data that can be used as a basis for understanding the long-term effect of the pandemic and the effectiveness of related policies.

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AUTHOR CONTRIBUTIONS

Dr. Yeon-Hwan PARK had full access to all of the data in the study and takes responsibility for the integrity of the data and the accuracy of the data analysis. All authors reviewed this manuscript and agreed to individual contributions.

Conceptualization: all authors. Data curation: HRC. Formal analysis: all authors. Investigation: HRC. Methodology: all authors. Writing—original draft: HRC. Writing—review & editing: all authors.

CONFLICTS OF INTEREST

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

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None.

DATA AVAILABILITY

The data presented in this study are available upon reasonable request from the corresponding author.

REFERENCES

1. Korea Disease Control and Prevention Agency. Social distancing of adjustment plan [Internet]. Korea Disease Control and Prevention Agency; 2022 [cited Feb 11, 2024]. Available from: https://www.kdca.go.kr/board/board.es?mid=a20501010000&bid=0015&act=view&list_no=719317
2. Korea Disease Control and Prevention Agency. Escape from the COVID-19 crisis and promote recovery of daily life [Internet]. Korea Disease Control and Prevention Agency; 2023 [cited Feb 11, 2024]. Available from: https://www.kdca.go.kr/board/board.es?mid=a20501010000&bid=0015&list_no=722503&cg_code=&act=view&nPage=6#
3. Adibi A, Jamshidbeigi H, Jamshidbeigi T, Mozafari A, Sahebi A. Anxiety and obsession following the COVID-19 Outbreak. *Iran J Psychiatry Behav Sci* 2020;14(2):e105919.
4. Morgado-Toscano C, Gomez-Salgado J, García-Iglesias JJ, Fagundo-Rivera J, López-López D, Allande-Cussó R. Levels of anxiety and fear among nurses during the COVID-19 pandemic: a systematic review. *J Nurs Manag* 2023;2023:2191984.

5. Lee SA. How much “Thinking” about COVID-19 is clinically dysfunctional? *Brain Behav Immun* 2020;87:97-8.
6. Wheaton MG, Messner GR, Marks JB. Intolerance of uncertainty as a factor linking obsessive-compulsive symptoms, health anxiety and concerns about the spread of the novel coronavirus (COVID-19) in the United States. *J Obsessive Compuls Relat Disord* 2021;28:100605.
7. Jasem SS, Al-Jubouri MB. Obsession with COVID-19 among health care providers. *Turk J Physiother Rehabil* 2021; 32(3):9195-9.
8. Park NR, Lee SR, Park JY. Factors influencing psychosocial well-being of general hospital nurses following the COVID-19 pandemic: a cross-sectional study. *J Korean Acad Fundam Nurs* 2023;30(4):469-78.
9. Song SH, Lee HS, Park JH, Kim KH. Validity and reliability of the Korean version of the posttraumatic growth inventory. *Korean J Health Psychol* 2009;14(1):193-214.
10. Calhoun LG, Cann A, Tedeschi RG, McMillan J. A correlational test of the relationship between posttraumatic growth, religion, and cognitive processing. *J Trauma Stress* 2000;13(3):521-7.
11. Kim Y, Lee N. Factors affecting posttraumatic growth of nurses caring for patients with COVID-19. *J Korean Clin Nurs Res* 2021;27(1):1-11.
12. Kim J, Shin G. Factors that influence post-traumatic growth of nurses in a national designated infectious disease hospital nurses’ post-traumatic growth. *Crisisonomy* 2023;19(3):1-10.
13. Tedeschi RG, Calhoun LG. The posttraumatic growth inventory: measuring the positive legacy of trauma. *J Trauma Stress* 1996;9(3):455-71.
14. Yoon S, Kim B. New graduate nurses’ stress, stress coping, adaptation to work, and job satisfaction: change comparison by personality. *J Korean Acad Nurs Adm* 2006;12(3):491-500.
15. Park WW, Son SY, Park H, Park HS. A proposal on determining appropriate sample size considering statistical conclusion validity. *Seoul J Ind Relat* 2010;21:51-85.
16. Choi E, Lee J, Lee SA. Validation of the Korean version of the obsession with COVID-19 scale and the Coronavirus anxiety scale. *Death Stud* 2022;46(3):608-14.
17. Bursac Z, Gauss CH, Williams DK, Hosmer DW. Purposeful selection of variables in logistic regression. *Source Code Biol Med* 2008;3:17.
18. Srivastava A, Bala R, Srivastava AK, Mishra A, Shamim R, Sinha P. Anxiety, obsession and fear from coronavirus in Indian population: a web-based study using COVID-19 specific scales. *Int J Community Med Public Health* 2020;7(11):4570-7.
19. Atreya A, Nepal S, Menezes RG, Shurjeel Q, Qazi S, Ram MD, et al. Assessment of fear, anxiety, obsession and functional impairment due to COVID-19 amongst health-care workers and trainees: a cross-sectional study in Nepal. *F1000Res* 2022;11:119.
20. Han SJ, Chun JY, Bae HJ. Post-traumatic growth of nurses in COVID-19 designated hospitals in Korea. *Int J Environ Res Public Health* 2022;20(1):56.
21. Korea Disease Control and Prevention Agency. Lowering the COVID-19 risk level from ‘Alert’ to ‘Concern’ [Internet]. Korea Disease Control and Prevention Agency; 2024 [cited Nov 7, 2024]. Available from: https://www.kdca.go.kr/gallery.es?mid=a20503020000&bid=0003&act=view&list_no=146529
22. Tedeschi RG, Calhoun LG, Cann A. Evaluating resource gain: understanding and misunderstanding posttraumatic growth. *Appl Psychol* 2007;56(3):396-406.
23. Hao Q, Wang D, Xie M, Tang Y, Dou Y, Zhu L, et al. Prevalence and risk factors of mental health problems among healthcare workers during the COVID-19 pandemic: a systematic review and meta-analysis. *Front Psychiatry* 2021;12:567381.
24. Al-Dossary RN, AlMahmoud S, Banakhar MA, Alamri M, Alb-aqawi H, Al Hosis K, et al. The relationship between nurses’ risk assessment and management, fear perception, and mental well-being during the COVID-19 pandemic in Saudi Arabia. *Front Public Health* 2022;10:992466.