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A Comparative Study on psychological state the face-to face and Non face-to-face Teaching Experience of Nursing student due to COVID-19

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간호대학생의 코로나-19로 인한 대면-비대면수업의 심리적 상태 비교연구

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Abstract The purpose of this study was to compare the psychological state of nursing students according to classes in the face-to-face and non-face-to-face situations during COVID-19. Subjects were randomly expressed. As for the analysis method, the difference in the scores of the dependent variables between the two groups was analyzed by an independent t-test. As a result of the study, The degree of depression and anxiety between the two groups was higher in face-to-face students(8.16±9.48, 8.20±9.93) and non-face-to-face students(7.08±8.38, 6.53±8.23) but not statistically significant (t=1.143(.254), (t=1.728(.085)). These results are used for the basis for preparing a program for psychological relief for students participating in face-to-face classes, and a repeated study on psychological depression and anxiety among students is suggested in the future when social distancing is prolonged.

Key Words : Nursing, Students, Depression, Anxiety, Psychological state

요 약 본 연구의 목적은 코로나 19 상황에서 대면과 비대면에 수업에 따른 간호대학생의 심리적 상태를 비교하고자 실시되었다. 대상자는 임의표출 하였으며, 분석방법은 두 집단의 동질성 검정은 χ2-test로 확인하였고, 두 그룹 간의 종속변수 점수의 차이는 independent t-test로 분석하였다. 연구결과 대면학생과 비대면학생의 우울정도는 대면학생이(8.16±9.48) 비대면학생(7.08±8.38)보다 높은 것으로 나타났으며, 불안정도도 대면학생이(8.20±9.93) 비대면학생(6.53±8.23)보다 높은 것으로 나타났으나 통계적으로 유의하지 않았다 (t=1.143(.254), (t=1.728(.085)). 본 연구결과 대면과 비대면수업 참여학생을 위한 심리적 완화를 위한 프로그램 마련의 기초가 되었으며, 향후 사회적 거리두기가 장기화되는 상황에서 대학생의 심리적 우울과 불안에 대한 반복연구를 제언한다.

주제어 : 간호, 학생, 불안, 우울, 심리상태

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1. Introduction

1.1 Need for research

Due to the prolonged period of COVID-19, travel and outdoor activities were restricted and the pattern of living at home emerged, resulting in higher incidents of depression and a new word called Corona Blue[1]. In 2020, Korean universities introduced “total distance education” which minimizes face-to-face contact of students by social distancing and non-face-to-face real-time or recorded lectures were used[2]. In this way, COVID-19 not only affected the learning patterns of universities, but also the emotions of college students. Since social distancing and mobility restrictions such as the implementation of distance classes and non-face-to-face classes at universities are required, there are increased cases where people complain of anxiety and loneliness as well as depression[3].

Looking at the previous studies related to corona depression, the results of the meta-analysis of depression during the COVID-19 outbreak reported that the prevalence of depression was 25%, which is 7 times higher than the global depression prevalence rate of 3.44% in 2017. According to a survey of 18,764 respondents from 14 universities in the United States, the depression of college students increased by 40.9% and anger by 31.1%[4]. As a result of a health condition survey conducted by the Korea Institute for Health Promotion in August 2020, 40.7% of respondents experienced depression and anxiety, and 50.7% of women and 34.2% of men experienced corona depression especially in their 20s and 40s. The majority of women in their 60s have experienced corona depression[5]

In the era of post-coronavirus, universities are conducting face-to-face classes while observing some social distancing precautions and preparing for the era of full-scale distance education. Due to the change of non-face-to-face class methods, college students are experiencing depression and experiencing lifestyle changes[6]. Also, it was said that loneliness and excessive use of YouTube in distance education also had a negative effect on adaptation to university life[3,7].

Compared to general college students, nursing students experience not only the challenges of general college life but also the stress of a unique undergraduate course in the field of nursing, which makes nursing students more vulnerable to depression and anxiety. Nursing students experience clinical practice as well as theoretical classes during the bachelor's course, and clinical practice appears to be a major stressor for nursing students[8]. It was found that 41% of nursing students experienced depression and 52.3% experienced anxiety, and 67% of nursing students who experienced depression also experienced anxiety[9,10]. Recently, there was a study[11] showing that social isolation, a feeling of helplessness, and depression due to the implementation of social distancing due to COVID-19 negatively affect learning satisfaction.

Hence, we intend to confirm the psychological state of nursing students according to the face-to-face and non-face-to-face classes caused by COVID-19 and use them as basic data for psychological relief.

1.2 Purpose of the research

This study intends to use it as a basic data for nursing department class management in the post-corona era through a comparative study on the psychological state of nursing students according to face-to-face and

non-face-to-face classes in the COVID-19.

2. Proposed Method

2.1. Research Design

This study is a control group post-experimental design study to check the psychological state of nursing students for students who participate in face-to-face and non-face-to-face classes under the COVID-19 situation.

Table 1. Research Design

Group	Pre	Tx	Post
Control	C1	X0	C1'
Experimental	□□E1□□	X1	E1'

X0=non-face-to-face, X1 = face-to-face

2.2. Research subject

The subjects of this study were those who understood the purpose of the study and agreed in writing to participate in the study for nursing college students who participate in face-to-face and non-face-to-face classes due to the spread of COVID-19. The experimental group was assigned to students who wanted face-to-face classes among the students participating in the nursing class, and the lectures were conducted face-to-face in the classroom. The control group was assigned to students who wanted non-face -to-face classes, and the lectures watched a separately produced video lecture uploaded to an online platform. In order to prevent the error of the experimental diffusion effect, the experimental group conducted the class in the face-to-face class and the control group conducted the class in the non face-to-face class and collected data. The experimental group and the control group were randomly expressed and assigned, and the number of study samples were calculated using the G*Power3.1 Program. The minimum sample size required for the independent t-test was calculated as effect size .90, power (1-β) .08, and significance level (α) .05. As a result, the number of subjects was calculated as 30 in each group. But at the time of the study, among nursing students participating in non-face-to-face classes and face-to-face classes, subjects who agreed to participate were selected., 168 people in the experimental group and 186 people in the control group participated in the study resulting.

2.3. Research tools

2.3.1. COVID-19 Peritraumatic Distress Index (CPDI)

The COVID-19 CPDI was utilized to measure the level of stress caused by COVID-19. This scale is a 24-item self-report test developed to evaluate the overall level of psychological distress, including depression, anxiety, specific phobias, cognitive changes, avoidance and compulsive behaviors, somatic symptoms, and decrease in social functioning[12]. Each item is rated on a 5-point Likert scale, with a total score ranging from 0 to 100. The internal reliability of CPDI was found to be excellent(Cronbach's α=.93), and in this study, Cronbach's α=.957

2.3.2. COVID-19 Preventive Behavior Scale (CPBS)

The COVID-19 CPBS was utilized to measure the level of epidemic-related preventive actions during the COVID-19 pandemic. CPBS was developed based on existing research exploring COVID-19-related behavioral changes and compliance with the National Centers for Disease Control and Prevention's National Code of Conduct for COVID-19 Prevention[12-14]. Each item consisted of two factors, social distancing and personal hygiene, which encompass the five key rules of personal quarantine, and 4 items for each factor, for a total of 8 items. Each item was rated on a

5-point Likert scale. The internal reliability of CPBS was found to be excellent (Cronbach's α=.880), and Cronbach's α=.888 in this study.

2.3.3. Engagement in Daily Activity Scale (EDAS)

EDAS was used to evaluate the level of vitality of daily activities. The EDAS consists of 5 items measuring daily activities, and each item was evaluated on a 5-point Likert scale. The internal reliability of EDAS was found to be excellent(Cronbach's α=.77), and in this study, Cronbach's α=.810

2.3.4 Korean Screening Assessment for Depressive Disorders (K-DEP)

To evaluate depressive symptoms, the K-DEP provided by the National Mental Health Center Mental Health R&D Project Team of the Ministry of Health and Welfare and the KU Mind Health Research Center at Korea University was used. This scale consists of a total of 12 items, and each item was evaluated on a 5-point Likert scale. In the validation study, K-DEP was found to be 'very good'(Cronbach's α=.89), In this study, Cronbach's α = .939

2.3.5 Korean Screening Tool for Anxiety Disorders (K-ANX)

To evaluate the level of anxiety, K-ANX provided by the National Mental Health Center Mental Health R&D Project Team of the Ministry of Health and Welfare and the KU Mind Health Research Center at Korea University was used. This scale consists of a total of 10 items, and each item was evaluated on a 5-point Likert scale. The total score of this scale ranges from 0 to 40, and K-DEP showed 'very good' with an accuracy of 94.6% in the ROCCurve analysis in the validation study. The internal reliability of K-ANX was Cronbach's α=.96, which was found to be .93 in this study.

2.4 Research hypothesis

The hypotheses of this study are as follows.

Hypothesis 1. There will be a difference in the degree of COVID-19 Preventive Behavior between students who took face-to-face classes and those who took non-face-to-face classes.

Hypothesis 2. There will be differences in the level of Engagement in Daily Activity between students who received face-to-face classes and those who took non-face-to-face classes.

Hypothesis 3. There will be a difference in the degree of depression between students who took face-to-face classes and those who took non-face-to-face classes.

Hypothesis 4. There will be a difference in Anxiety between students who took face-to-face classes and those who took non-face-to-face classes.

2.5 Research analysis

The collected data were analyzed using SPSS WIN 23.0. For general characteristics of subjects, frequency, percentage, mean, and standard deviation were calculated. The homogeneity test of the two groups was confirmed by the χ2-test, and the difference in the scores of the dependent variable between the two groups was analyzed by the independent t-test.

2.6 Ethical considerations of research

In this research survey, participation in face-to-face and non-face-to-face classes was voluntarily chosen by the students and personal information was not provided, It was explained that confidentiality, anonymity were guaranteed, and that the collected data was used only for research purposes, and

participants were allowed to participate in the survey voluntarily. In addition, participants were explained that the results are not related to any kind of evaluation and that they could withdraw from the study at any time, and informed consent was obtained. The surveyed questionnaire was analyzed by giving a unique number for each participant.

3. Results and Discussion

3.1 General characteristics and Homogeneity

The general characteristics of the subjects participating in this study are shown in Table 2. The experimental group accounted for 47.5% (n=168) and the control group for 52.50% (n=186). The percentage of gender was 11.0% (n=39) male and 89.0% (n=315) female students. The age of the participants were highest with 70.9% (n=251) for under the age of 22, 11.0% (n=39) among 23-24 years old and 18.1% (n=64) over 25 years old. Participants without religion were more common with 65.0% (n=230) compared to those with religion which reached 35.0% (n=124).

Results for homogeneity is shown in Table 3. In the homogeneity test of the experimental group and the control group, gender, age, and religion were all homogeneous (X2=.257 (p=.367), X2=.550(p=.760), X2=.001(p=.531)).

Table 2. General characteristics n=354

Characteristics	Categories	N(%)
Gender	Female	315(89.0)
	Male	39(11.0)
Age(yr.)	≤22	251(70.9)
	23~24	39(11.0)
	≥25	64(18.1)
Religion	yes	124(35.0)
	no	230(65.0)
Group	face-to-face	168(47.5)
	non-face-to-face	186(52.5)

Table 3. Homogeneity of the subject n=354

Characteris tics	Cate-gories	E	C	X/p
Gender	Female	148	167	.257/.367
	Male	20	19	
Age(yr.)	≤22	116	135	.550/.760
	23~24	20	19	
	≥25	32	32	
Religion	yes	59	65	.001/.531
	no	109	121	

3.2 Comparison of compliance with preventive rules, daily activity vitality, depression, and instability

The comparison results between the two groups can be seen in Table 4. As a result of measuring the level of social distancing and infectious disease-related preventive behaviors of personal hygiene between face-to-face students and non-face-to-face students during the COVID-19 epidemic, non-face-to-face students(15.55±5.20) were more precautious than face-to-face students (14.72±5.92). The level of compliance was found to be high, but it was not statistically significant(t=-1.399(.163)). Therefore, hypothesis 1 was rejected. On the other hand, non-face-to-face students(14.80±3.52) showed higher levels of vitality in daily activities than in-person students(13.92±3.67), which was higher and statistically significant (t=-2.297(.022)), hypothesis 2 was supported. As a result, non-face-to-face students' precautions and continued daily activities at home seem to act as a protective factor against the psychological effects of COVID-19[13].

The level of daily activities is likely to act as one of several factors that make it difficult to overcome the psychological effects of COVID-19. Therefore, it is important to find alternative ways to socialize online, watch movies online, etc., which can be alternatives even in the context of social distancing. Maintaining regular sleep and meal times,

relationships with people close to you, and exercising at home to promote daily activities can be factors that alleviative psychological depression and anxiety[15,16]. In addition, it is believed that it is necessary to prepare a thorough quarantine plan so that students participating in face-to-face classes can comply with the precautions in the COVID-19 situation.

The degree of depression between the two groups students was higher in face-to-face students(8.16±9.48) than non-face-to-face students(7.08±8.38), and the degree of anxiety was also higher for face-to-face students(8.20±9.93) when compared to non-face to-face students(6.53±8.23), but not statistically significant (t=1.143(.254), t=1.728(.085)). As a result, all hypotheses 3 and 4 were rejected.

In a study [17] that confirmed the psychological state before and after the COVID-19 situation for the general public using the same tool, the degree of depression in face-to-face and non-face to -face was 8.63 vs 8.15 and anxiety was 7.78 vs 7.53. It showed similar scores to those of the students who took the face-to-face class of this study. On the other hand, in a study conducted in Germany [18], increasing prevalence of depression symptoms(14.3vs.5.6%) as well as psychological distress(65.2vs.39%) was observed in face-to-face students. Also in the United States[19], the prevalence of symptoms of anxiety disorder increased in 2019 compared to previous years (25.5% versus 8.1%), as well as prevalence of depressive disorder (24.3% versus 6.5%).

However, in the results of this study, the anxiety and depression scores showed similar results to those before the corona situation, which seems to act as a protective factor against the psychological effects of COVID-19 due to the prolonged Corona 19. Therefore it is necessary to repeat the study in the future.

As the COVID-19 pandemic is prolonged, social distancing is being enforced and activities such as participation in social gatherings, meeting friends, and exercise are shrinking.

In addition, even if the class is conducted in-person, there are limitations in the operation of discussion and team activity teaching methods. Therefore, students participating in face-to-face and non-face-to-face classes actively utilize online contents such as real-time chatting, Kakao Talk, Webex meeting, and Metaverse to facilitate communication between professors and students. It should be possible to form a rapport and narrow the psychological distance.

Table 4. Comparison of depression and anxiety of students participating in face-to-face and non-face-to-face classes

Categories	Pre	Post	t	p
CPBS*	14.72±5.92	15.55±5.20	-1.399	.163
EDAS**	13.92±3.67	14.80±3.52	-2.297	.022
KDEP***	8.16±9.48	7.08±8.38	1.143	.254
KANX****	8.20±9.93	6.53±8.23	1.728	.085

*CPBS: COVID-19 Preventive Behavior Scale
**EDAS: Engagement in Daily Activity Scale
***K-DEP: Korean Screening Assessment for Depressive Disorders
****K-ANX : Korean Screening Tool for Anxiety Disorders

4. Conclusion

In this study, the depression and anxiety of nursing students in face-to-face and non-face-to-face classes were compared in the COVID-19 situation. As a result of the study, 168 face-to-face students and 186 non-face-to-face students were found to be female (89.0%), the age of 22 or younger (70.9%), and non-religious (65.0%).

Comparison result of face-to-face and non-face-to-face students' preventive behavior scale, engagement in daily activity scale, and

depression and anxiety, the level of observance of preventive behavior was found to be higher among non-face-to-face students, but it was not statistically significant. The level of engagement in daily activity was found to be statistically significantly higher in non-face-to-face students. Depression and anxiety were found to be higher in face-to-face students but were not statistically significant.

The results of this study can also be used as basic data for establishing measures for academic continuity of students in disaster or crisis situations that may occur in the future. Furthermore, it can be used as a basis for planning various measures as an alternative to alleviating psychological depression and anxiety in a situation where social distancing continues due to the corona situation.

Based on the above research results, I would like to suggest the following.

First, a repeated study on depression and anxiety that can confirm the psychological state of nursing students is suggested.

Second, we propose a study to verify the effectiveness of online-based learning operation by identifying how nursing students overcome depression and anxiety in the COVID-19 situation.

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