

Psychological Factors Influencing the Academic Achievement of Health Care Sector University Students in the Covid-19 Pandemic

Mi Young Moon¹ and Hyo Shin Kim^{2*}

¹Assistant Professor, Department of Nursing, Joongbu University, 201, Daehak-ro, Chubunmyeon, Geumsan-gun, Chungcheongnamdo, Republic of Korea
mmy@joongbu.ac.kr

²Assistant Professor, Biomedical Laboratory Science Department, DaeKyeung University, 38547 DaeKyeung University, 65, Danbuk-ri, Jain-myeon, Gyeongsan-si, Republic of Korea
hskim@tk.ac.kr

Corresponding Author: Hyo Shin Kim: hskim@tk.ac.kr

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ABSTRACT

The study is to providing exploratory data of seeking for the measures for improving the academic achievement in online education environment, by understanding the relations of academic achievement, major satisfaction, self-efficacy degree, and self-esteem targeting the health care sector students. Using the SPSS 21.0 Program, the data was analyzed. The results of this study are as follows. As a result of analyzing differences in major satisfaction with the sociodemographic characters of subjects, it was significant differences with department ($p<.001$), academic achievement($p=.028$), and motivation for major selection($p<.001$). In the analysis of differences in self-efficacy with the sociodemographic characters, it was significant differences with academic achievement($p=.001$) and motivation for major selection($p<.001$). The factor influencing the academic achievement was self-efficacy. The coefficient of determination(R^2) meaning the explanatory power of the model was 9.6%. Therefore, in order to increase learners' academic achievement, programs that can increase learners' interest in learning, interactions and feedback between professors and learners, awareness of learners' importance, and positive thinking processes to cope with crises must be provided.

Keywords: Academic performance, Personal satisfaction, Self-efficacy, Self-esteem, Health care sector

NEED OF RESEARCH

The spread of the COVID-19 pandemic in 2022 caused huge changes in the method of university education. To prevent the COVID-19 pandemic, the education was performed focusing on non-face-to-face class that could minimize face-to-face class. Online class which is non-face-to-face class has many strengths like learners can learn in desired time and place, repetitively watch it, and increase the effectiveness of learning by using extensive knowledge and various multimedia. However, due to the rapid changes in education environment caused by the COVID-19 pandemic, most professors did not have enough time and cost to develop online class content, and also to acquire techniques like filming. Total 17.5% of nursing students who were experiencing the COVID-19 pandemic were suffering from moderate or higher level of depression, and the change of education environment by the COVID-19 could be felt greatly [1].

Especially, the problems were raised like insufficient interactions & feedbacks between professor and learner, increased amount of learning by giving irrational tasks, poor lesson content, insufficient coping with laboratory works & practical courses, insufficient interactions between students, and unsuitable content for class assessment, which was reported to influence both class satisfaction and academic achievement [2].

If the major students selected accords with the criteria of their own future career or occupation, the major satisfaction is high, and the parts that are the most related with major satisfaction of university students are the degree of adaptation to school/major and major selection [3]. It is predictable that the online educational activities, none-face-to-face major practical activities, insufficient interaction between students, and absence of university life in the COVID-19 pandemic would influence major satisfaction.

Self-efficacy means the degree of confidence in one's own value, ability, and belief [4]. As an important element influencing learning outcomes, self-efficacy is reported as a factor that has positive effects on nursing students' adaptation to university life in a research by [5], and it becomes possible to predict the results of changed university life by the COVID-19 pandemic [6].

Self-esteem means an attitude to recognize or distrust oneself. A person with high self-esteem can enthusiastically achieve many things by trusting oneself [7]. This is a factor influencing the high academic achievement by placing value on one's own major studies and occupation, and also showing a creative ability [8].

Learners acquire the major satisfaction and academic achievement through the provided education environment. As the factors influencing the academic achievement in online learning, there were various factors such as learning motivation, self-regulated learning ability, computer skills, teaching role, interaction, quality of content, and physical environment [2]. In the COVID-19 pandemic, learners are not voluntarily choosing to participate in online class, but unavoidably participating in online class, which could cause difficulties in learning and also influence the academic achievement. The online class method caused by the COVID-19 pandemic could be predicted to enlarge educational gap between learners by limiting interactions between professor and learner, and causing negative effects on academic achievement of learners [6].

Therefore, the study purposes to provide data of seeking for the measures for improving the academic achievement in online education environment, by understanding the relations of academic achievement, major satisfaction, self-efficacy, self-esteem, and the factors influencing the improvement of academic performance targeting the health care sector.

2. METHOD STUDY

2.1 Design of study

The study is a exploratory survey research for understanding the effects of major satisfaction, self-efficacy, self-esteem on academic achievement of health care sector university students in the COVID-19 pandemic.

2.2 Analysis of subjects and Data Collection

This study used the convenience sampling method for enrolled students of the Departments of Nursing, Public Health Administration, and Physiotherapy, who experienced online class in the first semester of 2022, among the health sector of a university located in C nam-do in, Republic of Korea, from September 15, 2022 to September 20, 2022. The G- power 3.1 software [9] was used to calculate the proper number of samples. In the significance level as .05, test power as .95, effect size(r) as .15 (moderate), and nine predictive variables, the minimum sample size required for the multiple regression analysis was 166. Considering the dropout rate (28%) of research subjects, the questionnaires were distributed to and collected from 210 people through the convenience sampling.

After excluding nine questionnaires (4.3%) with insufficient responses from the collected questionnaires, total 201 people (95.7%) were selected as research subjects.

2.3 Tools of study

2.3.1 Sociodemographic Characters

The sociodemographic characters of research were composed of five questions about gender, age, school year, major department, and motivation for major selection.

2.3.2 Academic Achievement

Academic achievement means GPA (Grade Point Average) finally calculated after a learner who registered in the first semester of 2022 completes the semester.

2.3.3 Major Satisfaction

To measure the major satisfaction, this study used the modified/complemented instrument by Cho Won-Sook [3] who extracted 26 questions related to major satisfaction from the Program Evaluation Survey developed by Illinois University of the United States. Major satisfaction is divided into five sub-domains. It is divided into general satisfaction, major satisfaction, relationship satisfaction, perception satisfaction, and career survey. Each question was based on the Likert 5-point scale. In this study, the Cronbach's alpha value was .90.

2.3.4. Self-Efficacy

To measure self-efficacy, the study used the general self-efficacy scale by Kim [10]. The scale of self-efficacy was composed of total 24 questions based on the Likert 5-point scale. It is composed of total three subfactors such as confidence (7 questions), preference for task difficulty (5 questions), and self-regulated efficacy (12 questions). In the reliability of this research, the Cronbach's alpha value was .83.

2.3.5 Self-Esteem

To measure self-esteem, the study used the instrument adapted by Jon [12] based on the Rosenberg Self-Esteem (RSES) developed by Rosenberg [11]. This instrument is composed of total ten questions including five questions about positive attitude toward oneself and another five questions about negative attitude toward oneself. Each question is based on the Likert 4-point scale. In the reliability of the research, the Cronbach's alpha value was .83.

2.4 Data Analysis Method

The collected data was analyzed by the SPSS 21.0 program. The sociodemographic characters and degree of academic achievement, major satisfaction, self-efficacy, and self-esteem of nursing students were analyzed through the frequency, percentage, mean, and standard deviation. The differences in academic achievement, major

satisfaction, self-efficacy, and self-esteem with the sociodemographic characters of health sector university students were analyzed through the t-test, ANOVA, and Scheffe test. To understand the correlations of academic achievement, major satisfaction, self-efficacy, self-esteem of health sector university students, this study conducted the Pearson correlation analysis. In order to verify the effects of major satisfaction, self-efficacy, and self-esteem on academic achievement of health sector university students, the stepwise-multiple regression analysis was conducted.

3. CONCLUSIONS

3.1 Differences in variables with the Sociodemographic Characters

There were 133 women (66.2%) in gender, 128 subjects in their 20-23(63.7%) in age, and 112 third-year students (55.7%) and 89 fourth-year students (44.3%) in school year. In GPA, 3.5~3.99 points was shown in most subjects (N=89, 44.3%). As the motivation for major selection, total 61 subjects (30.3%) selected the major because the employment could be guaranteed [Table 1].

As a result of analyzing differences in major satisfaction with the sociodemographic characters, there were significant differences with department($p<.001$), academic achievement($p=.028$), and motivation for major selection($p<.001$). As a result of analyzing differences in self-efficacy with the general characters, there were significant differences with academic achievement($p=.001$) and motivation for major selection($p<.001$).

As a result of analyzing differences in self-esteem with the sociodemographic characters, there were significant differences with department($p=.045$) and improvement of academic performance.

Table 1. Sociodemographic Characters with Major Satisfaction

Characters	Classification	N (%)	Major satisfaction	
			mean±standard deviation	t / F (p)
Sex	Men	68(33.8)	3.84±0.49	0.604 (.547)
	Female	133(66.2)	3.80±0.41	
Age	20-23	128(63.7)	3.83±0.45	0.480 (.620)
	24-27	69(34.3)	3.79±0.44	
	28-30	0	0	
	Over 31	4(2.0)	3.64±0.44	
Grade	3rd	112(55.7)	3.83±0.41	0.897 (.371)
	4th	89(44.3)	3.78±0.47	
Major*	Nursinga	76(37.8)	3.88±0.36	15.209 (.000) b<a<c
	Health Administrationb	59(29.4)	3.56±0.34	
	Physical Therapyc	66(32.8)	3.95±0.51	
Academic record*	Under 2.50a	0	0	3.106 (.028) c<e
	2.50~2.99b	13(6.5)	3.92±0.42	
	3.00~3.49c	64(31.8)	3.70±0.43	
	3.50~3.99d	89(44.3)	3.81±0.46	
	4.00~4.50e	35(17.4)	3.97±0.38	
Major Choice Motivation*	High School recorda	29(14.4)	3.71±0.33	12.893 (.000) a,b,c,e<d
	Others' recommendationb	42(20.9)	3.89±0.40	
	Stable jobc	61(30.3)	3.66±0.37	
	Fit of aptituded	50(24.9)	4.10±0.42	
	Etc.e	19(9.5)	3.49±0.47	

* Scheffe post hoc analysis: $p<.05$

Table 2. Sociodemographic Characters with Self-efficacy

Characters	Classification	N(%)	Self-efficacy	
			mean±standard deviation	t / F (p)

Sex	Men	68(33.8)	3.29±0.47	-.102 (.919)
	Female	133(66.2)	3.30±0.38	
Age	20-23	128(63.7)	3.28±0.41	0.450 (.638)
	24-27	69(34.3)	3.32±0.41	
	28-30	0	0	
	over 31	4(2.0)	3.15±0.02	
Grade	3rd	112(55.7)	3.26±0.42	-1.411 (.160)
	4th	89(44.3)	3.34±0.39	
Major*	nursinga	76(37.8)	3.37±0.36	2.284 (.105)
	Health Administrationb	59(29.4)	3.22±0.37	
	Physical Therapyc	66(32.8)	3.28±0.48	
Academic record*	Under 2.50a	0	0	5.717 (.001) b<d,e
	2.50~2.99b	13(6.5)	2.99±0.20	
	3.00~3.49c	64(31.8)	3.19±0.38	
	3.50~3.99d	89(44.3)	3.38±0.39	
	4.00~4.50e	35(17.4)	3.37±0.47	
Major Choice Motivation*	high School recorda	29(14.4)	3.17±0.38	6.145 (.000) c<d
	Others' recommendationb	42(20.9)	3.27±0.39	
	Stable jobc	61(30.3)	3.25±0.41	
	Fit of aptituded	50(24.9)	3.52±0.40	
	etc.e	19(9.5)	3.10±0.28	

* Scheffe post hoc analysis : p< .05

Table 3. Sociodemographic Characters with Self-esteem

Characters	Classification	N (%)	Self-esteem	
			mean±standard deviation	t /F (p)
Sex	Men	68(33.8)	3.33±0.56	-1.166 (.245)
	Female	133(66.2)	3.42±0.43	
Age	20-23	128(63.7)	3.43±0.44	1.809 (.167)
	24-27	69(34.3)	3.34±0.54	
	Over 31	4(2.0)	3.05±0.10	
Grade	3rd	112(55.7)	3.38±0.47	-0.336 (.737)
	4th	89(44.3)	3.40±0.48	
Major*	Nursing a	76(37.8)	3.50±0.44	3.161 (.045) b,c<a
	Health Administration b	59(29.4)	3.35±0.46	
	Physical therapy c	66(32.8)	3.30±0.51	
Academic record*	2.50~2.99a	13(6.5)	3.40±0.44	6.241 (.000) b<c
	3.00~3.49b	64(31.8)	3.22±0.45	
	3.50~3.99c	89(44.3)	3.54±0.50	
	4.00~4.50d	35(17.4)	3.31±0.36	
Major Choice Motivation*	High school record a	29(14.4)	3.41±0.41	2.374 (.054)
	Others' recommendation b	42(20.9)	3.37±0.45	

	Stable job c	61(30.3)	3.37±0.54	
	Fit of aptitude d	50(24.9)	3.53±0.44	
	Etc. e	19(9.5)	3.14±0.46	

* Scheffe post hoc analysis: $p < .05$

3.2 Degree of Variables

The degree major satisfaction, self-efficacy, and self-esteem of subjects is follows[Table 4]. The mean and standard deviation were shown as 3.81 ± 0.44 for major satisfaction, 3.29 ± 0.41 for self-efficacy, and 3.39 ± 0.48 for self-esteem.

Table 4. The status of Major satisfaction, Self-efficacy and Self-esteem

Classification		mean±standard deviation	Maximum	Minimum
Major satisfaction		3.81± 0.44	5.00	3.00
Sub-area	General satisfaction	3.94±0.63	5.00	2.40
	Major Satisfaction	3.95±0.51	5.00	3.00
	Relationship satisfaction	4.03±0.59	5.00	2.75
	Perception satisfaction	4.07±0.68	5.00	2.33
	career survey	3.03±0.47	5.00	2.20
Self-efficacy		3.29±0.41	4.75	2.17
Sub-area	Confidence	3.24±0.78	5.00	1.43
	Task difficulty preference	2.64±0.77	5.00	1.00
	Self-regulating efficacy	3.60±0.41	5.00	2.50
Self-esteem		3.39±0.48	4.40	2.00

3.3 Correlations of Variables

As a result of analyzing the relevance of academic achievement, major satisfaction, self-efficacy, and self-esteem of subjects, there were positive correlation between academic achievement and self-efficacy ($r=.251$, $p<.001$), positive relevance between major satisfaction and self-efficacy ($r=.415$, $p<.001$), positive relevance between major satisfaction and self-esteem ($r=.359$, $p<.001$), and positive relevance between self-efficacy and self-esteem ($r=.545$, $p<.001$)[Table 5].

Table 5. Correlation with Academic achievement, Major satisfaction, Self-efficacy, Self-esteem

Classification	Academic Achievement		Major Satisfaction		Self-efficacy		Self-esteem	
	r	p	r	p	r	p	r	p
Academic achievement	1		.061	.132	.251	.000	.181	.095
Major satisfaction			1		.415	.000	.359	.000
Self-efficacy					1		.545	.000
Self-esteem							1	

3.4 Factors on Academic Achievement

In order to verify the factors influencing the academic achievement of subjects, the multiple regression analysis was conducted by setting up academic achievement as a dependent variable, and general characteristic variables, major satisfaction, self-efficacy, and self-esteem of subjects as independent variables.

The regression equation was shown as significant ($F=3.660$, $p=.001$), and the factor influencing the academic achievement was self-efficacy ($\beta=.269$, $p=.002$). The coefficient of determination(R^2) meaning the explanatory power of the model was 9.6% [Table 6].

Table 6. Factors affecting on Academic Achievement

Classification	Contents	B	β	t(p)	R2	Adjusted R2	F(p)
Academic Achievement	Const	1.916		2.644 (.009)	.364	.096	3.660 (.001)
	Sex	.220	.127	1.529			

				(.128)			
	Age	-.185	-.135	-1.620 (.107)			
	Grade	.180	.109	1.491 (.138)			
	Major	-.068	.069	-0.962 (.337)			
	Major Choice Motivation	.002	.003	0.049 (.961)			
	Major Satisfaction	.130	.070	0.921 (.358)			
	Self-efficacy	.536	.269	3.139 (.002)			
	Self-esteem	-.205	-.120	-1.424 (.156)			

4. DISCUSSION

The study purposes to provide essential data of seeking the measures for improving the academic achievement in online education environment, by understanding the relations of improvement of academic performance, major satisfaction, self-efficacy, and self-esteem, and the factors influencing an improvement of academic performance targeting the health care sector university students in the COVID-19 pandemic.

As a result of analyzing differences in major satisfaction with the sociodemographic characters of research subjects, it were significant differences according to department, academic achievement, and motivation for major selection. The research by [13] also reported significant differences in major satisfaction according to major department and motivation for major selection of university students, In the research by [14], the major satisfaction was significantly high according to school year, major, motivation for major selection, school record, and satisfaction with school record. In the research by [15], the major satisfaction was high according to school year and satisfaction with university life, these was similar to the results of the study. In this result, a major satisfaction was high because the major was selected by considering one's own aptitude and character based on the stability of employment and occupational expertise under the characteristics of health sector. Thus, based on the great effects of motivation for major selection on satisfaction, the major satisfaction could be improved by providing continuous management according to the motivation for major application after figuring out the motivation for major selection when entering school.

In the results of analyzing differences in self-efficacy with the sociodemographic characteristics, there were significant differences according to academic achievement and motivation for major selection. In the research by [6] targeting nursing students, it was significant differences in self-efficacy according to age. In the research by [1] targeting course the bachelor's degree in nursing, it were significant differences with major satisfaction, personality traits, motivation for major selection, and matter of getting helps for non-face-to-face study. When the non-face-to-face class was positively perceived as helpful, self-efficacy was high. The research by [1] is explaining that the student who positively perceives learners and external environment shows high self-efficacy. Based on such results, the education environment that provides online class should arouse students' interest in learning through various teaching/learning methods, design various methods for increasing their satisfaction with class, and also provide non-major courses that could improve their positive thinking and self-efficacy even in the COVID-19 pandemic.

In the results of analyzing differences in self-esteem with the sociodemographic characteristics, there were significant differences according to department and academic achievement. In the research by [16], there were significant differences according to gender, major satisfaction, and health status. In the research by [17], these were significant differences according to satisfaction with current university life, major satisfaction when entering school, and school record of last semester. In the research by [18][27], when the interpersonal relationship was better, and when the subjective health status was better, there were significant differences. In research by [19] targeting university students, the scores of self-esteem before and after the COVID-19 were 29.93 and 26.67 respectively, so university students showed lower self-esteem after the COVID-19. The research by [17][28] is explaining that high self-esteem places high value on their own major and occupation, and the necessity to establish the support system and support programs considering the characteristics of each individual student. Thus, in order to implant self-confidence in non-face-to-face class in learners, their fear and confusion about non-face-

to-face class should be reduced by providing information about department and courses, and interactions/feedbacks between learner and professor. Also, professors should deliver the clear learning goals and educational content through the thorough preparation for educational content, and understand learners' difficulties and satisfaction with class.

In the research by [20], self-efficacy and major satisfaction showed a positive correlation, which means when self-efficacy is higher, major satisfaction is high. In the research by [21], self-efficacy is the factor the most influenced by major satisfaction, and the students with high self-efficacy show high major satisfaction. In a research by [6] targeting nursing students, self-efficacy and major satisfaction showed a positive relevance.

Once self-confidence increases, it has positive effects on the overall university life including major satisfaction, which shows the similar context to the research by [6]. However, the research by [22][25][26] is explaining that the COVID-19 is giving negative effects on the factors related to major satisfaction such as educational outcome, class satisfaction. Just as shown in result of this study, when self-esteem and self-efficacy are higher, academic achievement also gets higher, so there should be the measures for providing learners with psychological & emotional support programs such as mentoring program, mutual-interchange promotion program within department, counseling program, and positive psychology program in the level of university/department during the COVID-19 pandemic.

5. CONCLUSION AND SUGGESTIONS

In the results of this study, the factor influencing the academic achievement was self-efficacy. In the research by [1], the major satisfaction, school record, health status, and positive thinking were important factors for non-face-to-class, showing negative correlations with Corona depression, and showing positive correlations with self-efficacy. In the research by [23], the online class achievement was high when the school year was high, and when there were previous experiences of online class.

To increase learners' academic achievement, it would definitely be necessary to apply a method that could increase learners' interest and participation through various methods of delivering education and learning strategies suitable for individual characteristics after setting up educational goals even for the lower grades [24].

Therefore, in order to increase learners' academic achievement, programs that can increase learners' interest in learning, interactions and feedback between professors and learners, awareness of learners' importance, and positive thinking processes to cope with crises must be provided.

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