



The mediating effects on the relationship between campus life adaptation and clinical competence



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ABSTRACT

Background: The solution to the shortage of nursing staff is to improve the quality of nursing education and training rather than to increase the admission capacity. It is necessary for the university to establish the current level of nursing education and find ways to improve it. The clinical competence of nursing college students is an ability to perform the desired nursing role to solve the nursing needs of the subjects in the clinical field, which is an important aspect of nursing students' practical training. Therefore, to improve the quality of practical training, it is necessary to improve the clinical competence of nursing students.

Objectives: The purpose of this study was to investigate the mediating effect of social support and resilience on the relationships of campus life adaptation and clinical competence.

Design: This study is of a cross-sectional, descriptive correlation design.

Methods: Characteristics of the respondents, campus life adaptation, social support, resilience, and clinical competence were collected, using self-reported questionnaires, from July 1 to September 10, 2017. Data were analyzed by frequency, percentage, mean, standard deviation, *t*-test and ANOVA with Scheffe post hoc, Pearson correlation coefficients, the 3-steps multiple regression statistics of Baron and Kenny.

Results: Social support and resilience had a partial mediating effect on the relationships of campus life adaptation and clinical competence. In addition, clinical competence increased as more male nursing students enrolled and more students adapted well to the nursing department.

Conclusions: The result of this study is expected to be used as evidence data for the development of a program to improve the clinical competence of nursing students.

1. Introduction

Campus life adaptation is a form of active management to meet personal needs from various aspects such as study, career, personal relationship, emotion, satisfaction in the major, and so on in the sociocultural environment of the university (Hamidi and Hosseini, 2010), and it is considered very important from admission to graduation. Because campus life adaptation can affect future academic adaptation, satisfaction with the major, study, and employment (Hamidi and Hosseini, 2010). Considering this aspect, it is thought that campus life adaptation may affect clinical competence in the future.

Focusing only on the impact of campus life adaptation on clinical competence limits the ways to improve clinical competence for students with difficulties in campus life adaptation. Therefore, it is important to consider aspects that complement the relationship between campus life adaptation and clinical competence by looking at the variables that

provide mediating effects in the relationship between the two.

2. Background

To solve the shortage of nursing staff, nation-level quantitative measures such as an increase in admission capacity for colleges of nursing has been continuously implemented. However, despite solving the shortage, such measures resulted in a difficulty in securing good training institutions and a reduction in the quality of practical training. The solution to the shortage of nursing staff is to improve the quality of nursing education and training rather than to increase the admission capacity (American Association of Colleges of Nursing, 2017; Korean Nurses Association, 2017). Therefore, it is necessary for universities to review the previous studies related to the practical training that had been carried out so far to discover the level of current nursing practice education and find ways to improve it.

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As a result of reviewing previous studies, the practical training of nursing students was measured in indirect ways, such as clinical competence (Bromley, 2014; Helminen et al., 2017), satisfaction with clinical practice (Lofmark et al., 2012), and stress in clinical practice (Kim et al., 2017). In particular, the clinical competence of nursing students consists of the ability to perform the desired nursing role by combining knowledge, skills, attitudes, and clinical judgment to solve the nursing needs of the subject in the clinical field (Karabacak et al., 2013). Therefore, it is necessary to develop program that can enhance clinical competence for nursing college students.

To develop a clinical competence promotion program, many studies have been done to identify relevant factors that influence clinical competence such as satisfaction with clinical practice and clinical competence (Baek et al., 2013), critical thinking and clinical competence (Distler, 2007; Lee et al., 2015), self-reflection and clinical competence (Pai et al., 2017), etc. Previous studies were conducted on the relationship between clinical practice-related variables and clinical competence in the third and fourth years whose clinical practices have already begun. For the first- and second-year students, most studies focused on their campus life adaptation (Fernandez et al., 2017; Katz and Somers, 2017).

However, practical training in colleges of nursing is also needed not only to manage and mediate the clinical competence of the students in clinical practice, but also to predict and manage the clinical competence of students in the first and second years who have not yet experienced the field (Jung, 2013). The researchers think early management and intervention of clinical practice training of nursing students before the beginning of their practice will contribute to improvement in the dropout rate and quality of clinical practice.

The more students who are good at campus life adaptation, the more positively they perceive social support around them and the better their resilience, the ability to overcome difficulties and stressful situations by themselves (Jun et al., 2015; Kim and Kim, 2013; Son et al., 2017). As the clinical competence of nursing students who perceive social support positively and have high resilience can be improved (Jang and Kwag, 2013; Jung, 2013; Kim, 2015; Yang, 2015), their campus life adaptation may have a positive impact on future clinical competence through studies on causal relationships; presently, the mediating effects are insufficient. Therefore, it is necessary to identify whether social support and resilience of nursing college students provide mediating effects in relation to campus life adaptation and clinical competence.

The researchers think this study will provide the basic data for development of a program to anticipate and mediate the clinical competence of nursing students before their clinical practices and ultimately contribute to the training of qualified nursing staffs.

3. Method

3.1. Design

This study is a cross-sectional, descriptive correlation, which attempts to determine the mediating effects of social support and resilience on the relationships of campus life adaptation and clinical competence. This study design was used to measure the relationship between two or more variables at one point in a sample.

3.2. Respondents

The respondents of this study were third- and fourth-year nursing students who had experience in clinical practice. They understood the purpose of this study, and voluntarily participated in the study. The inclusion criteria for the respondents were third- and fourth-year nursing college students with clinical practice experience, and exclusion criteria were either no experience in clinical practice or grade 1 and 2 students. This study used convenience sampling method. The total

number of respondents was 249, and the dropout rate was 11.1%.

3.3. Data Collection and Ethical Consideration

This study was conducted after obtaining approval from the Bioethics Committee of K University (Approval No.: 1040117-201,707-HR-024-02). Respondents were told that the purpose, process, and results of the study were not used for any purpose other than research, that all questionnaires would be processed anonymously, and that they could be withdrawn at any time if they did not want to participate in the study. After the respondents who agreed to take part in the study signed the consent form, the questionnaire was filled out. Data were collected by self-reported questionnaires from July 1 to September 10, 2017. The researchers visited the college of nursing of the school where the study would be conducted, explained to the dean the purpose and method of the study, and asked for cooperation. Data was collected after obtaining permission to conduct the study. The questionnaire was distributed to 280 people, considering a dropout rate, and a total of 249 questionnaires were used for the final analysis, excluding 31 questionnaires whose answers were insufficient.

3.4. Instrument

3.4.1. Campus Life Adaptation

To measure campus life adaptation of nursing students, the researchers used the tool developed by Park (2017) after it was approved for use. This tool was developed to measure campus life adaptation for Korean nursing college students. In addition, it is the tool that verified content validity of nursing professors' group, construct validity, convergent and discriminant validity test, criterion related validity, and reliability of Cronbach's alpha. This tool consisted of seven subscales, 43 items: interpersonal relationship (9 items), satisfaction with the major (9 items), excellence in the major (5 items), active coping (5 items), job preparation (3 items), academic fidelity (3 items), and field practice adjustment (9 items). Each item was measured as 1 point, 'not at all', to 5 points 'agree strongly'. The higher the score, the better the adaptation to campus life.

3.4.2. Clinical Competence

A six-dimension scale of clinical competence developed by Schwirian (1978) was modified by Choi (2005). To measure the nursing students' clinical competence, the researchers used the tool modified by Choi (2005) after it was approved for use. This tool was developed to measure clinical competence for Korean nursing college students. In addition, it is the tool that verified content validity of nursing expert group, construct validity, and reliability of Cronbach's alpha. This tool consisted of 45 items in five subscales: nursing process (11 items), nursing skill (11 items), educational cooperation relationship (8 items), interpersonal relationship/communication (6 items), and professional development (9 items). Each item was measured as 1 point, 'not at all', to 5 points, 'agree strongly'. The higher the score, the better the clinical competence.

3.4.3. Social Support

To measure the social support of nursing students, the researchers used the tool developed by Oh et al. (2008) after it was approved for use. This tool was developed to measure social support for Korean college students and adults. In addition, it is the tool that verified content validity of expert group, construct validity, convergent and discriminant validity test, reliability of Cronbach's alpha and test-retest reliability. This tool consisted of three subscales, 32 items: emotion (15 items), belief (6 items), and assistance (11 items). Each item was measured as 1 point, 'not at all', to 5 points, 'agree strongly'. The higher the score, the better the social support.

3.4.4. Resilience

To measure the resilience of nursing students, the researchers used the tool developed by Yang et al. (2015) after it was approved for use. This tool was developed to measure resilience for Korean nursing college students. In addition, it is the tool that verified content validity of nursing professors' group and nursing managers' group, construct validity, criterion related validity, reliability of Cronbach's alpha. This tool consisted of seven subscales, 24 items: confidence (3 items), positivity (4 items), coping ability (2 items), emotional regulation (3 items), organizational style (4 items), relationship (4 items), and social support (4 items). Each item was measured as 1 point, 'not at all', to 5 points, 'agree strongly'. The higher the score, the better the resilience.

3.5. Data Analysis

The collected data was analyzed using the Statistical Package for the Social Sciences/Window version 24.0 program. The characteristics of the respondents were analyzed by frequency, percentage, mean and standard deviation. The differences in clinical competence by characteristics of the respondents were analyzed by *t*-test and ANOVA with Scheffe post hoc, and the correlation between variables was analyzed by the Pearson correlation coefficients. The mediating effect of social support and resilience was the 3-steps multiple regression statistics of Baron and Kenny, and the statistical significance of the mediating effect were analyzed by the Sobel test.

4. Results

4.1. Characteristics of the Respondents

The general characteristics of the respondents in this study are shown in Table 1. All respondents were in their twenties, with male students accounting for 15.7% and female students accounting for 84.3%. Of all the respondents, 41.0% and 59.0%, respectively, were third-year and fourth-year students. In terms of adaptation level of nursing department, 49.0% responded 'fair', and 47.4% responded 'good'. In terms of satisfaction level for their major, 61.4% replied 'fair'; 32.6%, respectively, responded 'satisfied'. 'Satisfaction with major' means satisfaction with nursing theory education and 'satisfaction with clinical practice' means satisfaction with nursing practice education.

4.2. Differences in Clinical Competence According to Characteristics of Respondents

Male students had higher scores on clinical competence ($t = 2.66, p = .008$), and the students who adapted to their major better than the normal level had higher scores in clinical competence than students

Table 1
Characteristics of the respondents (N = 249).

Characteristics	Categories	n (%)
Gender	Male	39 (15.7)
	Female	210 (84.3)
Type of school	College	132 (53.0)
	University	117 (47.0)
Grade	3rd	102 (41.0)
	4th	147 (59.0)
Adaptation of nursing department	Good	118 (47.4)
	Fair	122 (49.0)
	Bad	9 (3.6)
Satisfaction with major	Satisfied	81 (32.6)
	Fair	153 (61.4)
	Unsatisfied	15 (6.0)
Satisfaction with clinical practice	Satisfied	81 (32.6)
	Fair	144 (57.8)
	Unsatisfied	24 (9.6)

Table 2
Differences in clinical competence according to characteristics of respondents (N = 249).

Characteristics	Categories	Clinical competence	
		Mean ± SD	t or F (p)
Gender	Male	3.55 ± 0.47	2.66 (0.008)
	Female	3.35 ± 0.42	
Type of school	College	3.37 ± 0.46	-0.65 (0.518)
	University	3.40 ± 0.41	
Grade	3rd	3.35 ± 0.45	-1.13 (0.261)
	4th	3.41 ± 0.43	
Adaptation of nursing department	Good (a)	3.52 ± 0.40	20.61 (< 0.001)
	Fair (b)	3.30 ± 0.40	
	Bad (c)	2.74 ± 0.56	
Satisfaction with major	Satisfied (a)	3.54 ± 0.39	15.15 (< 0.001)
	Fair (b)	3.35 ± 0.41	
	Unsatisfied (c)	2.94 ± 0.50	
Satisfaction with clinical practice	Satisfied (a)	3.55 ± 0.39	10.04 (< 0.001)
	Fair (b)	3.31 ± 0.42	
	Unsatisfied (c)	3.24 ± 0.51	

who had difficulty adapting ($F = 20.61, p < .001$). Students with more than the normal level of satisfaction with their major had higher clinical competence scores than students who were not satisfied ($F = 15.15, p < .001$), and students with high satisfaction in clinical practice had higher clinical competence scores than students who were not satisfied ($F = 10.04, p < .001$) (Table 2).

4.3. Correlations Among Main Variables

There was positive correlation among campus life adaptation, social support, resilience, and clinical competence (Table 3), intermediate correlation between clinical competence and campus life adaptation ($r = 0.58, p < .001$), weak correlation between clinical competence and social support ($r = 0.47, p < .001$), and intermediate correlation between clinical competence and resilience ($r = 0.68, p < .001$).

4.4. The Mediating Effect of Social Support on the Relationship of Campus Life Adaptation to Clinical Competence

To test the mediating effects of social support on the relationship between campus life adaptation and clinical competence, Baron and Kenny's 3-step results are as follows. Step 1, campus life adaptation, an independent variable, had a significant effect on social support, a mediator variable ($p < .001$), and the explanatory power was 32.9%. Step 2, campus life adaptation, an independent variable, had a significant effect on clinical competence, a dependent variable ($p < .001$), and the explanatory power was 32.9%. Step 3, social support, a dependent variable, had significant impact on clinical competence, a dependent variable ($p = .002$), and mediating effect was verified. In addition, campus life adaptation, an independent variable, had a significant effect on clinical competence, a dependent variable ($p < .001$), and as non-standardization factor (B) decreased from 0.66 at step 2 from 0.57 at step 3, it was shown to have a partial mediating effect. Among the characteristics of the subjects, gender and academic adjustment were found to be factors affecting clinical competence. Male students ($\beta = 0.16, p = .001$) and students who adapted well ($\beta = 0.34, p = .024$) had higher clinical competence scores (Table 4).

4.5. The Mediating Effect of Resilience in Relationships between Campus Life Adaptation and Clinical Competence

The result of verifying the mediating effect of resilience on the relationship between campus life adaptation and clinical competence of nursing college students is shown in Table 5.

To test the mediating effects of resilience on the relationship

Table 3
Correlations among campus life adaptation, social support, resilience, and clinical competence (N = 249).

	Campus life adaptation	Social support	Resilience	Clinical competence
	r (p)	r (p)	r (p)	
Campus life adaptation	1			
Social support	0.51 (< 0.001)	1		
Resilience	0.70 (< 0.001)	0.52 (< 0.001)	1	
Clinical competence	0.58 (< 0.001)	0.47 (< 0.001)	0.68 (< 0.001)	1

between campus life adaptation and clinical competence, Baron and Kenny's 3-step results were as follows. Step 1, campus life adaptation, an independent variable, had a significant effect on resilience, a mediator variable ($p < .001$), and the explanatory power was 51.3%. Step 2, campus life adaptation, an independent variable, had a significant effect on clinical competence, a dependent variable ($p < .001$), and the explanatory power was 39.3%. Step 3, resilience, a dependent variable, had a significant impact on clinical competence, a dependent variable ($p = .002$), and mediating effect was verified. Campus life adaptation, an independent variable, had a significant effect on clinical competence, a dependent variable ($p < .001$), and as the non-standardization factor (B) decreased from 0.66 at step 2 from 0.46 at step 3, it was shown to have a partial mediating effect. Among the characteristics of the respondents, gender and academic adjustment were found to be factors affecting clinical competence. Male students ($\beta = 0.20$, $p = .049$) and students who adapted well ($\beta = 0.36$, $p = .004$) had higher clinical competence scores.

As a result of verification of multiple mediators in the Sobel test, social support and resilience were confirmed as significant mediators in the relationship between campus life adaptation and clinical competence ($Z = 2.12$, $p = .017$) (Fig. 1).

5. Discussion

The purpose of this study was to analyze the mediating effect of social support and resilience on the relationship between campus life adaptation and clinical competence among nursing college students and to provide basic data for a clinical competence promotion program. As a result, social support or resilience was found to be mediated by the relationship between campus life adaptation and clinical competence. That is, a student who adapted well to campus life could not be assumed to have high clinical competence. Instead, it was confirmed that clinical competence could be improved in the future only when both the social support system around the students and their internal resilience were positive.

The findings were consistent with previous studies, such as correlation between campus life adaptation and social support (Jun et al.,

2015; Kim and Kim, 2013), correlation between campus life adaptation and resilience (Son et al., 2017), correlation between social support and clinical competence (Jung, 2013; Moked and Drach-Zahavy, 2016), and correlation between resilience and clinical competence (Kim, 2015; Lauder et al., 2008; Yang, 2015).

That is, it was confirmed that to improve the clinical competence of nursing college students, it was necessary not only for them to adapt to college life but also to have resilience to cope with various stresses and adversities they encountered in the clinical practice environment by themselves (Kim et al., 2017; Lauder et al., 2008). Also, the social environment that supports the student externally was also confirmed to be important (Jun et al., 2015; Moked and Drach-Zahavy, 2016).

In this study, male students evaluated their clinical competence higher than female students, which is consistent with the previous study (Yang, 2015) and inconsistent with previous studies (Do and Seo, 2014; Kim et al., 2017). In terms of the results of the study showing that male students' clinical performance was better than that of female students, because previous studies show contradictory results, respondents of this study were from convenience sampling, and the male proportion was higher than that of female, so there is a need to pay attention to the interpretation of the results of this study. Therefore, it is necessary to re-examine and interpret the results of national, large-scale research for the validity and generalization of this research results.

However, the results of this study and previous studies are consistent in terms of the difference in clinical competence between male and female students (Kim and Hwang, 2014; Yang, 2015). Recently, there has been an increase in male students entering colleges of nursing (Demonsthenes, 2008; Korean Educational Statistics Service, 2013), and because clinical competence is a very important ability for nursing students as well as for nurses (Abbasi et al., 2017; Flinkman et al., 2017).

Students with good adaptation to their major had higher scores in clinical competence than students who did not adapt. Because most previous studies on clinical competence focused on correlation between satisfaction in the major and clinical competence and correlation between satisfaction in clinical practice and clinical competence (Kim, 2015; Kim and Hwang, 2014; Yang, 2015), and because few studies

Table 4
The mediating effect of social support (N = 249).

Variables	Step 1. Social support					Step 2. Clinical competence					Step 3. Clinical competence				
	B	SE	β	t	p	B	SE	β	t	p	B	SE	β	t	p
Constant	0.82	0.34		3.03	0.003	0.73	0.25		2.90	0.004	0.60	0.23		2.65	0.009
Gender (Male)	0.02	0.09	0.01	0.25	0.804	0.19	0.06	0.16	3.22	0.001	0.19	0.06	0.16	3.23	0.001
Adaptation of nursing department (Good)	0.71	0.19	0.58	3.74	< 0.001	0.39	0.13	0.45	3.03	0.003	0.30	0.13	0.34	2.27	0.024
Adaptation of nursing department (Fair)	0.79	0.18	0.64	4.39	< 0.001	0.35	0.12	0.40	2.86	0.005	0.24	0.12	0.28	1.95	0.052
Satisfaction with major (Satisfied)	0.42	0.17	0.32	2.54	0.012	0.04	0.11	0.05	0.39	0.696	-0.01	0.11	-0.01	-0.11	0.910
Satisfaction with major (Fair)	0.38	0.14	0.30	2.62	0.009	0.14	0.10	0.16	1.49	0.139	0.09	0.10	0.11	0.97	0.333
Satisfaction with clinical practice (Satisfied)	0.15	0.13	0.12	1.19	0.236	0.03	0.09	0.03	0.31	0.757	0.01	0.09	0.01	0.08	0.940
Satisfaction with clinical practice (Fair)	0.07	0.12	0.05	0.58	0.566	-0.13	0.08	-0.15	-1.65	0.101	-0.14	0.08	-0.16	-1.79	0.075
Campus life adaptation	0.71	0.12	0.39	6.17	< 0.001	0.66	0.08	0.52	8.54	< 0.001	0.57	0.08	0.44	6.92	< 0.001
Social support											0.63	0.10	0.19	3.12	0.002
	R ² = 0.351, Adj. R ² = 0.329, F(p) = 16.20 (< 0.001)					R ² = 0.412, Adj. R ² = 0.393, F(p) = 21.04 (< 0.001)					R ² = 0.435, Adj. R ² = 0.414, F(p) = 20.47 (< 0.001)				
	Sobel test: Z = 2.12, p = .017														

Table 5
The mediating effect of resilience (N = 249).

Variables	Step 1. Resilience					Step 2. Clinical competence					Step 3. Clinical competence				
	B	SE	β	t	p	B	SE	β	t	p	B	SE	β	t	p
Constant	0.62	0.23		2.87	0.004	0.73	0.25		2.90	0.004	0.60	0.23		2.66	0.008
Gender (Male)	0.18	0.06	0.15	3.23	0.001	0.19	0.06	0.16	3.22	0.001	0.11	0.06	0.20	2.81	0.049
Adaptation of nursing department (Good)	0.11	0.12	0.12	0.89	0.375	0.39	0.13	0.45	3.03	0.003	0.34	0.12	0.39	2.93	0.004
Adaptation of nursing department (Fair)	0.07	0.11	0.07	0.58	0.561	0.35	0.12	0.40	2.86	0.005	0.32	0.11	0.36	2.88	0.004
Satisfaction with major (Satisfied)	0.02	0.11	0.02	0.20	0.845	0.04	0.11	0.05	0.39	0.696	0.03	0.10	0.04	0.34	0.735
Satisfaction with major (Fair)	0.08	0.09	0.08	0.84	0.400	0.14	0.10	0.16	1.49	0.139	0.11	0.09	0.12	1.24	0.216
Satisfaction with clinical practice (Satisfied)	0.12	0.08	0.12	1.47	0.143	0.03	0.09	0.03	0.31	0.757	-0.03	0.08	-0.03	-0.36	0.719
Satisfaction with clinical practice (Fair)	0.05	0.07	0.05	0.65	0.514	-0.13	0.08	-0.15	-1.65	0.101	-0.15	0.07	-0.17	-1.13	0.064
Campus life adaptation	0.89	0.07	0.66	12.25	< 0.001	0.66	0.08	0.52	8.54	< 0.001	0.46	0.06	0.48	7.42	< 0.001
Resilience											0.68	0.11	0.29	2.51	0.013
	R ² = 0.529, Adj. R ² = 0.513, F(p) = 33.69 (< 0.001)					R ² = 0.412, Adj. R ² = 0.393, F(p) = 21.04 (< 0.001) Sobel test: Z = 2.12, p = .017					R ² = 0.522, Adj. R ² = 0.504, F(p) = 29.03 (< 0.001)				

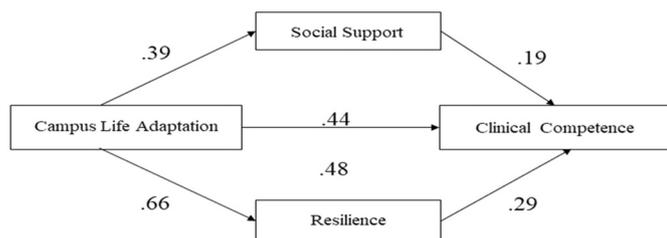


Fig. 1. The mediating effect of social support and resilience in relationships of campus life adaptation and clinical competence.

focused on the relevance to adaptation level, it was impossible to establish the consistency between previous and current studies. However, because adaptation to the study of nursing is expected to have positive or negative effects on clinical competence as well as campus life adaptation, it may be necessary to try revalidation of research results through replication study.

Finally, this study confirmed that campus life adaptation by nursing college students has the greatest influence on clinical competence, which offers an opportunity to recognize the need for attention and intervention before the start of clinical practice, to improve clinical competence. The limitation of this study is that it cannot be directly compared and interpreted with previous studies because they studied relationship between measurable parameters and clinical competence after clinical practice (Baek et al., 2013; Jang and Kwag, 2013; Kim, 2007; Pai et al., 2017).

5.1. Study Limitations

Because this study was only conducted with South Korean nursing students, care should be taken in interpreting and applying the results to nursing students in other countries as well as to students in other age groups. Also, for generalization of the study results, we suggest that large-scale replication study should be done not only among third- or fourth-year students, but also among first- and second-year students. The tools used in this study were already verified with reliability and validity for nursing college students or college students at the time of development, but the validity and reliability were not verified in this study.

6. Conclusion

In this study, social support and resilience seem partly to mediate the relationship between campus life adaptation and the clinical competence of nursing college students, which confirms the necessity of developing programs that can promote not only campus life adaptation

but also social support and resilience. Because students who have difficulty adapting to school life from the time they enter school are highly likely to have difficulty in clinical practice adaptation and clinical performance, it is necessary to develop a program to manage and mediate those problems early such as campus life adaptation programs, social support or resilience enhancement programs, and clinical practice preparation programs. Based on these results, the researchers suggest conducting research to develop and validate the effect of clinical competence promotion programs for nursing college students.

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Conflict of Interest

The researchers declare that there are no conflicts of interest.

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