Abstract

**Purpose:** The purpose of this study is to understand the effect of clinical practice stress and department satisfaction of nursing students on their nursing professionalism.

**Method:** This study was conducted on 220 nursing students from two universities located in J city from November 4 to November 29, 2019. The collected data were processed with t-test, ANOVA, Pearson correlation analysis, and regression analysis using the SPSS 18.0 program.

**Results:** As a result of the study, the clinical practice stress of nursing college students showed a negative correlation with nursing professionalism (r=−.33, p<.01). The department satisfaction of nursing college students showed a positive correlation with nursing professionalism (r=.65, p<.01). In addition, the department satisfaction of nursing college students showed an influence on nursing professionalism (β=.670, p<.001), and the explanatory power was 42%.

**Conclusion:** It is hoped that the results of this study can be used as basic data for enhancing department satisfaction and improving the clinical practice curriculum of nursing students in the future by identifying the clinical practice stress and department satisfaction of nursing students and analyzing the factors affecting the nursing professionalism.

[Keywords] Nursing Students, Clinical Practice, Stress, Satisfaction, Nursing Professionalism

1. Introduction

In accordance with the Korea Nursing Assessment Service’s policy to improve on-site practical ability, clinical practice education for nursing college students has become more important in the recent nursing education. Nursing students are now required to complete more than 1,000 hours of clinical practice during their bachelor’s program, which has further increased the burden on nursing students for clinical practice[1].

Clinical practice stress refers to a state of tension that affects the emotions, thinking processes, and physical conditions experienced by nursing students in relation to clinical practice [2]. In addition, this refers to a condition that interferes with efficiently conducting clinical practice due to negative emotions such as anxiety and fear about clinical practice [3]. Looking at the contents of clinical practice stress, Kim Soon-rye and Lee Jong-eun[4] summarized a total of five areas: practical education environment, undesirable role model, sharing of practice tasks, interpersonal conflict, and conflict with patients. In addition, Hwang Seong-ja[3] summarized a total of three areas: 5 situational factors of medical personnel's attitude, patient and guardian's attitude, practice environment, practice situation, role conflict; 3 personal factors of psychological factors, knowledge and technical factors, and social factors; 2 external factors of assignments and academic schedule.
Clinical practice is a curriculum that develops prospective nurses' practical skills by applying theoretical knowledge and skills acquired in schools to the nursing field and is a learning course that develops the maximum potential of nursing students and develops their creativity and adaptability[5]. This is an important factor that develops them into professional nurses after graduation. However, nursing college students still experience serious tension and stress about the situation in which they actually apply their yet insufficient knowledge and skills in actual nursing situations. It has been reported that they complain of difficulties in adapting to the practice environment during the clinical practice process and experience physical/mental fatigue and helplessness[3][6]. Stress and fatigue that are constantly experienced during clinical practice can be a cause of a decline in their interest and ability in clinical practice and nursing[7]. In addition, this not only lowers their satisfaction with clinical practice and leads to a lack of clinical performance, but can also make it difficult to train excellent nurses with expertise along with lowering the quality of medical services[8].

Nursing students experience stress and psychological anxiety from clinical practice due to unfamiliar environments, lack of confidence, excessive assignments, role conflict, lack of expertise, confusion due to differences in theory and practice, unexpected critical situations, and the burden of forming therapeutic relationships with patients and caregivers. Since clinical practice is conducted within the university curriculum, students are rarely given control over practice institutions, training periods, and clinical practice leaders according to their needs. In addition, since the results of clinical practice experience are evaluated as credits, it causes tremendous stress to nursing students.

When looking at department satisfaction, that is, satisfaction with the major, one is the emotional aspect and the other is the cognitive aspect. The former is the level of enjoyment of various emotions experienced by individuals for their major, and the latter can be said to be the level of perception that the expectations of themselves or those around them have been achieved. Department satisfaction is the degree of subjective satisfaction with the overall daily life related to the department and is affected by the student’s expectations for the department’s life and individual psychological factors.

Nursing professionalism refers to a systematic view of nursing as a professional, and a professional-conscious view of the nursing activity process and its occupational role[9]. It refers to basic beliefs and values that allow nurses to provide quality nursing with an occupational consciousness[10]. In practice, where complex decision-making situations are gradually increasing, nursing professionalism is closely related to the overall quality of nursing and the future development of nursing professions[11]. This is the core of holistic nursing practice and is directly related to the values of nursing[10]. Failure to establish nursing professionalism leads to conflict, feeling that the nursing profession is insignificant and trivial[12]. The higher the nurse’s nursing professionalism, the lower the turnover intention, organizational commitment, job satisfaction, and happiness in clinical fields[13][14][15]. Therefore, in order for nursing college students to quickly adapt and socialize as professional nurses, education for systematic and positive nursing professionalism should be provided along with knowledge and technical education[16].

Nursing professionalism is a systematic view of nursing as a professional and a professional view of the nursing activity process in charge of nursing and its position[9]. It refers to the basic beliefs and values that allow nurses to provide quality nursing with a vocation for their jobs[10]. Views on nursing refers to how to view and think about nursing and is directly related to the values of nursing, that is, ideology, subject, essence, and purpose of nursing. Nursing professionalism is a view that combines views on nursing and professionalism[17]. This is an important concept because personal satisfaction as well as the value of nursing is recognized by the public through it[18]. Eun-ja Yoon et al.[10] classified nursing professionalism into the following areas: "professional self-concept" representing basic qualities such as personality, attitude, and posture that nurses should have; "social awareness" that measures social perception of nursing and
nurses from various aspects; "nursing expertise" that encompasses views on the characteristics of nursing as a professional; "practical roles of nurses" as an act expected to be performed by a nurse; "identity of nursing" that implies autonomy, uniqueness, and independence of nursing within the medical system. Before the development of measurement tools for nursing professionalism, terms for professional attitudes and self-awareness, a sub-area of nursing professionalism were used, and related research was conducted around them.

As nurses establish positive and firm nursing professionalism, they can harmonize with various professionals in the medical field to provide quality nursing services and perform nursing work efficiently[10]. In addition, this increases nurses' organizational commitment and job satisfaction and lowers turnover intention[9]. Considering the increasing number of new nurses unable to overcome the impact in reality in the clinical field and adapt to professional socialization, it is necessary to develop desirable nursing professionalism through nursing education[19]. Nursing students entering the nursing department begin to form nursing professionalism while receiving specialized theoretical and practical education, growing and changing continuously[9]. If a negative image of the job of a nurse is formed even before the values or professional perspectives of nursing are established, conflicts in one's work and lack of pride in one's job as a nurse may arise after becoming one[20].

The main factors influencing the nursing professionalism of nursing college students are self-esteem, self-efficacy, satisfaction with one's major[21][22][23], perception of nurses[11][24][25][26], and clinical practice stress[27]. It is necessary to understand the nature of nursing during the process of socializing nursing students as professional nurses and establish values for nursing on their own. In addition, when providing professional and holistic nursing services to subjects in clinical practice, nursing professionalism as well as nursing knowledge and skills should be based on[27][28]. Nursing college students' nursing professionalism is formed through theoretical and practical curricula. Clinical practice is a very important curriculum that forms values for nursing professionals while confirming and applying theoretical knowledge learned in school in the field. Therefore, research is needed to confirm the degree of nursing professionalism of nursing college students who have experienced clinical practice and to identify factors influencing nursing professionalism among clinical practice experiences[16].

In this respect, in the case of nursing students, it can be seen that understanding the stress of clinical practice of nursing students is more important than anything else. However, studies examining clinical practice stress in terms of department satisfaction are lacking.

2. Purpose of Research

This study aims to provide basic data for enhancing department satisfaction and improving the clinical practice curriculum for nursing students in the future by identifying the clinical practice stress of nursing students and analyzing factors affecting department satisfaction and nursing professionalism.

1) Identify the stress of clinical practice, department satisfaction, and nursing professionalism of nursing college students.

2) Identify differences in clinical practice stress, department satisfaction, and nursing professionalism according to the general characteristics of nursing students.

3) Identify the correlation between clinical practice stress, department satisfaction, and nursing professionalism.

4) Identify the effect of clinical practice stress and department satisfaction of nursing students on nursing professionalism.
3. Research Method

The general characteristics of nursing students consisted of a total of 10 questions: gender, age, school year, religion, nursing selection motivation, clinical practice experience, clinical practice satisfaction, clinical practice period, health status, and grades.

3.1. Research design

This study is a descriptive research study to investigate the factors of the effect of clinical practice stress on department satisfaction and nursing professionalism of nursing college students.

3.2. Research tool

3.2.1. Stress of clinical practice

Clinical practice stress was measured using a tool of 24 question items developed by Beck and Srivastava[2] and modified and supplemented by Kim Soon-rye and Lee Jong-eun[4]. This tool is divided into five sub-areas: practical education environment (5 questions), undesirable role model (6 questions), practical work burden (4 questions), interpersonal conflict (4 questions), and conflict with patients (5 questions). This was measured on a 5-point Likert scale ("Strongly disagree" = 1 point, 'Strongly agree" = 5 points), and the higher the total score, the higher the clinical practice stress. In the study of Kim Soon-rye and Lee Jong[4], Cronbach's α was .91, and Cronbach's α of the tools in this study was .91.

3.2.2. Department satisfaction

In order to measure department satisfaction, 27 questions modified and supplemented by Kim and Ha based on Braskamp, Wise[9], and Hengstler's Program Evaluation Survey[29] were used. This tool consists of five sub-factors: general satisfaction on the nursing major (7 questions), perception satisfaction based on social perception (5 questions), satisfaction on the subjects of the nursing major (3 questions), satisfaction with relationship between professors and students (3 questions), and school satisfaction (9 questions). This was measured on a 5-point Likert scale ("Strongly disagree" = 1 point, 'Strongly agree" = 5 points), and the higher the total score, the higher the department satisfaction. In the study of Kim and Ha, Cronbach's α was .92, and Cronbach's α of this study was .94.

3.2.3. Nursing professionalism

The nursing professionalism was measured the tool of 18 question items developed by Yoon Eun-ja et al.[10], revised and supplemented by Han Sang-sook et al.[30]. This tool is divided into five sub-areas: professional self-concept (6 questions), social perception (5 questions), nursing expertise (3 questions), nursing role (2 questions), and nursing identity (2 questions). This was measured on a 5-point Likert scale ("Strongly disagree" = 1 point, 'Strongly agree" = 5 points). Negative questions were reversely calculated. The higher the total score, the higher the nursing professionalism. In the study of Han Sang-sook et al.[16], Cronbach's α was .91, and in this study, Cronbach's α was .90.

4. Data Collection Method

This study was conducted using a structured questionnaire from November 4 to November 29, 2019, targeting nursing students from two universities located in J city. After explaining the purpose and method of the study, personal information protection, and time required for the survey to the study subjects, the questionnaire was distributed after voluntary participation and written consent. It was explained that the collected questionnaire is anonymous, and if they did
not want to participate in the study, they could withdraw it, and there was no disadvantage. It was also explained that the research data were not used except for research purposes, and all research questionnaires were discarded after the study was submitted to the journal. The survey took about 10 minutes, and a small gift was provided to the survey participants.

5. Data Analysis Method

The data collected in this study were analyzed using the SPSS 23.0 program as follows.

1) The general characteristics of the subjects were analyzed by real numbers and percentages, mean and standard deviation.

2) The subjects' clinical practice stress, department satisfaction, and nursing professionalism were analyzed as mean and standard deviation.

3) The t-test was conducted for differences in clinical practice stress, department satisfaction, and nursing professionalism according to the subject's school year.

4) The correlation between the subject's clinical practice stress, department satisfaction, and nursing professionalism was analyzed using Pearson's correlation coefficients.

5) The effects of clinical practice stress and department satisfaction on nursing professionalism were analyzed using multiple regression analysis.

6. Results

6.1. General characteristics

In terms of the general characteristics of nursing students, there were 207 women (94.1%) and 13 men (5.9%). In terms of age, 77 (35.0%) were aged 21 and 22, followed by 41 (18.6%) aged 24 or older, 18 (8.2%) aged 23, and 7 (3.2%) aged 20. For school year, 108 (49.1%) were juniors and 112 (50.9%) were seniors. For religion, 108 fell to others (49.1%), and there were 80 Christians (36.4%), 23 Catholics (10.4%), 7 Buddhists (3.2%), and 2 Won Buddhists (0.9%). When asked about the motivation for choosing a nursing department, 85 people (38.6%) cited a high chance of employment, 50 people (22.8%) cited "fitting aptitude and hobbies," 48 people (21.8%) cited "recommendation of parents or teachers," 28 people (12.7%) cited "considering high school performance," and 9 cited other motivations (4.1%). All 220 participants (100%) had clinical practice experience. In the case of clinical practice satisfaction, 94 (42.8%) were "neutral", 59 (26.8%) were "satisfied", 47 (21.4%) were "dissatisfied", 10 (4.5%) were "very satisfied", and 10 (4.5%) were "very satisfied". For the clinical practice period, 106 people (48.2%) were "more than 6 months", 66 (30.0%) were "3-6 months" and 48 (21.8%) were "less than 3 months". In the case of health status, 93 people (42.3%) were "normal" and 64 people (29.1%) were "bad". In the case of academic performance, 152 students (69.1%) accounted for the majority with GPA of 3.0-3.9 refer to <Table 1>.

<table>
<thead>
<tr>
<th>Table 1. General characteristics.</th>
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<tbody>
<tr>
<td>Variables</td>
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<tr>
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<tr>
<td>Gender</td>
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<tr>
<td></td>
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<tr>
<td>Variables</td>
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<tr>
<td>----------------------------</td>
</tr>
<tr>
<td>Stress of Clinical Practice</td>
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<tr>
<td>Department Satisfaction</td>
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<tr>
<td>Nursing Professionalism</td>
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</tbody>
</table>

Note: N=220.

6.2. Stress of clinical practice, department satisfaction, nursing professionalism of nursing students

In this study, nursing students' clinical practice stress averaged 3.26 out of 5, department satisfaction averaged 3.21 out of 5, and nursing professionalism averaged 3.77 out of 5 refer to Table 2.

Table 2. Stress of clinical practice, department satisfaction, nursing professionalism of nursing students.
6.3. Differences in stress of clinical practice, department satisfaction and nursing professionalism according to academic year

The stress of clinical practice in nursing college students was higher among seniors than among juniors (t=1.27, p=.255). Department satisfaction was higher among juniors than among seniors (t=2.03, p=.159). As for the nursing professionalism (t=2.35, p=.124), it was found that juniors were higher than seniors <Table 3>.

**Table 3.** Differences in stress of clinical practice, department satisfaction and nursing professionalism according to academic year.

<table>
<thead>
<tr>
<th>Variables</th>
<th>Categories</th>
<th>Stress of Clinical Practice</th>
<th>Department Satisfaction</th>
<th>Nursing Professionalism</th>
</tr>
</thead>
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<tr>
<td></td>
<td></td>
<td>M±SD</td>
<td>M±SD</td>
<td>M±SD</td>
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<tr>
<td></td>
<td></td>
<td>t or F(p)</td>
<td>t or F(p)</td>
<td>t or F(p)</td>
</tr>
<tr>
<td>Academic year</td>
<td>Third</td>
<td>3.24±0.61</td>
<td>3.24±0.57</td>
<td>3.64±0.63</td>
</tr>
<tr>
<td></td>
<td>Fourth</td>
<td>3.30±0.55</td>
<td>3.21±0.67</td>
<td>3.55±0.68</td>
</tr>
</tbody>
</table>

Note: N=220.

6.4. Correlation between stress of clinical practice, department satisfaction and nursing professionalism

The clinical practice stress of nursing students showed a positive-negative correlation with nursing professionals (r=.33, p<.01), and the department satisfaction of nursing students showed a positive correlation with nursing professionalism (r=.65, p<.01) <Table 4>.

**Table 4.** Correlation between stress of clinical practice, department satisfaction and nursing professionalism.

<table>
<thead>
<tr>
<th></th>
<th>Stress of Clinical Practice</th>
<th>Department Satisfaction</th>
<th>Nursing Professionalism</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stress of Clinical Practice</td>
<td>-33**</td>
<td>-.16*</td>
<td>-1.00</td>
</tr>
<tr>
<td></td>
<td>(p=.000)</td>
<td>(p=.015)</td>
<td></td>
</tr>
<tr>
<td>Department Satisfaction</td>
<td>-33**</td>
<td>1.00</td>
<td>.65**</td>
</tr>
<tr>
<td></td>
<td>(p&lt;.001)</td>
<td></td>
<td>(p&lt;.001)</td>
</tr>
<tr>
<td>Nursing Professionalism</td>
<td>-.16*</td>
<td>.65**</td>
<td>1.00</td>
</tr>
<tr>
<td></td>
<td>(p=.015)</td>
<td>(p&lt;.001)</td>
<td></td>
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</tbody>
</table>

Analysis method: Pearson correlation coefficient

Note: N=220, *p<.05, **p<.01, ***p<0.001.

6.5. Effect of stress of clinical practice on department satisfaction, nursing professionalism of nursing students

The department satisfaction of nursing college students showed influence on nursing professionalism, and the explanatory power was 42%. According to the results of regression analysis, clinical practice stress (β=.056, p=.275) did not affect nursing professionalism. It was found that the higher the department satisfaction (β=.670, p=.000), the higher the nursing professionalism. Therefore, it can be interpreted that it is important to improve nursing professionalism by improving department satisfaction. As a result of the above study, as a result of examining the degree of clinical practice stress, department satisfaction, and nursing professionalism of nursing college students, it was verified that department satisfaction was a significant factor influencing nursing professionalism <Table 5>.
Table 5. Effect of stress of clinical practice on department satisfaction, nursing professionalism of nursing students.

<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>Independent Variable</th>
<th>B</th>
<th>SE</th>
<th>β</th>
<th>t</th>
<th>p</th>
<th>R²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nursing Professionalism</td>
<td>Stress of Clinical Practice</td>
<td>.061</td>
<td>.056</td>
<td>.055</td>
<td>1.093</td>
<td>.275</td>
<td>.42</td>
</tr>
<tr>
<td>Department Satisfaction</td>
<td></td>
<td>.700</td>
<td>.053</td>
<td>.670</td>
<td>13.125</td>
<td>.000</td>
<td></td>
</tr>
</tbody>
</table>

Analysis method: Regression analysis

Note: N=220.

7. Discussion

In this study, the relationship between the degree of clinical practice stress, department satisfaction, and nursing professionalism of nursing college students was investigated, and the effects of clinical practice stress and department satisfaction on nursing professionalism were as follows.

In this study, the degree of stress in clinical practice for 3rd and 4th year students of nursing college was 3.26 out of 5. This was higher than the results of 2.8 points of Park Hyun-jung and Oh Jae-woo[27], and 3.02 points of Park Byung-joon, Park Sun-jung, and Jo Ha-na[31]. As in this study, nursing students who have experienced clinical practice usually suffer from more than moderate clinical practice stress, and the subject of this study is thought to have increased the clinical practice stress of nursing students. This is consistent with the research results in the study of Hwang Seong-ja[3] that the unfamiliar hospital environment caused increased clinical practice stress. Generation Z has a stronger motivation for admission to nursing than in the past and has acquired a lot of information about nursing through admission promotional materials and social media, but it is believed that there will be practical difficulties such as work burden on nursing, clinical practice, conflict, assignments, and changes in academic schedules.

This has a great influence on department satisfaction[27][32] and clinical practice satisfaction[7][8][31], and is also reported to have an effect on nursing professionalism[27][31]. Considering that clinical practice must be conducted within the curriculum, it is believed that policy reflection and social and national support from departments and schools that can minimize the stress of clinical practice are essential for nursing students.

The department satisfaction of nursing college students was 3.21 out of 5, indicating that they were experiencing above-average department satisfaction. This is lower than the 3.78 points presented in the study of Cho Jung-ae and Kim Jung-sun[33]. To solve the current problem of nursing manpower shortage, the government is looking for a solution by increasing the number of nursing college students rather than reducing turnover by improving the nurse's salary system and working environment[34]. This study was conducted later than that of Cho Jung-ae and Kim Jung-sun[33]. It is believed that the increase in the number of students due to the increase in the admission quota of nursing colleges not only hinders smooth communication with instructors but also leads to dissatisfaction with the department even within clinical practice, which is an essential curriculum. This situation of dissatisfaction causes negative views and occupational confusion for nurses' job performance and hinders the formation of positive nursing professionalism[35]. Therefore, it is necessary to consider measures for improving department satisfaction so that nursing students can become nurses with the right nursing professionalism and adapt well to the clinical field.

The nursing professionalism score of nursing college students was 3.77 out of 5. This is higher than 3.56 points, which is the result of the study of Hong Sung-sil and Park Mi-jeong[36], and
3.63 points, which is the result of the study of Lee si-ra[37]. It was said that nurses with a positive nursing profession have higher satisfaction with their jobs, better performance ability, and a higher degree of organizational commitment in performing nursing work[38]. Therefore, it is believed that having a positive nursing professionalism from the time of nursing college is the beginning of strengthening the competence of nurses.

As a result of this study, the department satisfaction (β=.670, p<.001) of nursing students showed influence on nursing professionalism. It can be seen that improving department satisfaction with 42% explanatory power is a factor influencing nursing professionalism. This was consistent with the studies of Park Hyun-jung, Oh Jae-woo[27], Park Byung-joon, Park Sun-sung, and Jo Ha-na[31], which are the results of previous studies on nursing professionalism. In the case of department satisfaction, it is reported that department satisfaction is higher in the case of club activities than in the case of lower grades[39]. Studies have shown that satisfaction with the department is high when there is a strong motivation to obtain job-related information and have future confidence in the job[40]. Therefore, it is necessary to provide information on the department from the time of admission and to actively conduct mentoring and direct counseling by professors to solve difficulties in adapting to the department.

In addition, it is necessary to start steps to establish a nursing professional through department events and employment-related programs so that department satisfaction can be increased.

In the case of clinical practice stress (β=.056, p=.275), it was found that it did not affect nursing professionalism. In the case of clinical practice stress, it has a negative correlation and is a factor that affects nursing professionals. This is contrary to the studies of Park Hyun-jung and Oh Jae-woo[27] and Jeon Won-hee[41].

Based on these research results, the clinical practice stress of nursing students includes adaptation to unfamiliar practice environments, weighting physical and mental fatigue, and helplessness caused by deprivation of opportunities to provide direct nursing at the crime scene. However, as a prospective nurse who conducts indirect nursing activities or observations rather than direct nursing activities, the clinical practice of nursing students is considered to be a short time to have a nursing profession that allows them to adapt to the clinical field and demonstrate professional abilities. It is emphasized that nursing professionals obtained through clinical practice are important not only for nursing students but also for new nurses[27]. It is of paramount importance to establish a desirable nursing profession even after becoming a nurse, and this is thought to be obtained through clinical practice-related curriculum throughout nursing college students rather than through an one-time clinical practice curriculum. Therefore, efforts should be made to establish a systematic nursing professional perspective while continuous clinical practice is underway in nursing education.

However, it is necessary to continuously investigate the stress felt in the clinical field from nursing college students to become a nurse, and to conduct follow-up studies to identify the influencing factors of nursing professionalism.

Based on the results of this study, as a result of examining the degree of clinical practice stress, department satisfaction, and nursing professionalism of nursing college students, it was verified that department satisfaction was a significant factor influencing nursing professionalism. Accordingly, measures to improve the department satisfaction of nursing students should be sought, and positive nursing professionalism should be formed through support with professors, classmates, seniors, and juniors to promote them.
8. Conclusion and Suggestion

Suggestions for follow-up studies are as follows. First, since the subjects were students enrolled in nursing departments at two universities located in J city, there is a limit to generalizing the research results, so repeated research and systematic comparative analysis are needed for nursing college students from various backgrounds in various regions.

Second, since this study confirmed the correlation between clinical practice stress, department satisfaction, and nursing professionalism, department satisfaction, and nursing profession, various models are applied to investigate the specific path to causal relationship.

Third, by developing and applying a program that can improve the department satisfaction of nursing students, we propose a follow-up study that can examine the department satisfaction and nursing professionalism of nursing students.

9. References

9.1. Journal articles


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9.2. Thesis degree

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[37] Lee S. Nurse Image, Satisfaction of Major Effect on Nursing Professionalism of Male Students in Nursing. Ajou University, Master’s Thesis (2011).

10. Appendix

10.1. Authors contribution

<table>
<thead>
<tr>
<th>Initial name</th>
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<tr>
<td></td>
<td>-Set of concepts ✔</td>
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<tr>
<td></td>
<td>-Design ✔</td>
</tr>
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<td>-Getting results ✔</td>
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<td>-Analysis ✔</td>
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<td>-Make a significant contribution to collection ✔</td>
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<td>-Final approval of the paper ✔</td>
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<td>-Corresponding ✔</td>
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<td></td>
<td>-Play a decisive role in modification ✔</td>
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<td></td>
<td>-Significant contributions to concepts, designs, practices, analysis and interpretation of data ✔</td>
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<td>-Participants in Drafting and Revising Papers ✔</td>
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<td>-Someone who can explain all aspects of the paper ✔</td>
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*Corresponding Author*