

The Impact of Peer-assessed Fundamentals of Nursing Skills Education and Self-leadership on Self-directed Learning Ability and Learning Attitudes

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Abstract

This study is a descriptive survey to determine the effects of fundamentals of nursing skills education with peer evaluation on self-leadership, self-directed learning ability, and learning attitude. The factors affecting self-directed learning ability were peer evaluation, self-leadership, and learning attitude ($F=118.81$, $p<.001$), with an explanatory power of 50.4%. The factors affecting learning attitude were peer evaluation, self-leadership, and self-directed learning ability ($F=48.89$, $p<.001$), with an explanatory power of 29.5%. Based on the results of this study, we believe that it is necessary to apply various teaching methods such as peer evaluation and promote self-leadership to improve self-directed learning and learning attitude.

Keywords: Peer Evaluation, Clinical skills, Self-leadership, Self-directed learning, Learning Attitude

1. Introduction

1.1 Need for Research

As a result of changes in the healthcare environment, the ability of nurses to judge situations, determine and apply interventions is emphasized, but currently, nursing students are faced with the difficulty of not being able to adapt well to the problematic situations of the subjects even after completing the curriculum due to inadequate nursing skills, lack of experience and adaptability to clinical situations [1, 2]. The fundamental of nursing is a curriculum that educates students to learn the basics and concepts of nursing and to apply them through clinical skills, and it consists of theory and practical classes, and nursing students are educated to cultivate the core and basic nursing skills required to solve the health problems of subjects through the basic nursing practice course. The problem with practical training is that it consists of a passive process of repeating and training nursing skills on a model, which does not improve students' understanding of the actual situation of nursing patients and their self-directed judgment and problem-solving skills [3]. As nursing practical education is mainly conducted by observation (37.4%) and oral presentation (32.4%), the decline of students' practical skills has emerged as a problem [4]. Core nursing skill performance has been emphasized as one of the variables that affect clinical performance in providing safe care to clients [5].

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Relationships with coworkers are important for professional development to enhance nurses' practical skills and to promote positive learning attitudes and motivation in learners and improve team productivity [6]. Building relationships with diverse coworkers can be the cornerstone of work performance and is effective for teamwork and work performance, leading to the importance of peer evaluation and subsequent self-reflection for professional development and enhancement [7]. Peer review promotes self-directed learning, making the learning process personal [8]. The enhanced learning motivation by peer review is noteworthy in that it strengthens nursing skills, overcomes the intimidation of being evaluated by an educator, and enhances self-confidence and problem-solving skills by directly or indirectly sharing in the successful experiences of peers who went through similar experiences [9].

Peer evaluation is an effective teaching strategy, and evaluation activities through peer interaction will be a great significance as it allows to focus on learning attitudes and the process of practical performance rather than simple evaluation which focuses independence and cultivates skills and learning abilities by recognizing them as collaborators rather than competitors. Especially in hands-on subjects, learning attitudes are enhanced when learning is easy and enjoyable [10]. Through peer evaluation, learners share the process of teaching and learning among themselves and discover their own leadership by revising their thoughts as learners and evaluators and comparing and reviewing with their peers [11]. Self-leadership is latent in everyone and it is strengthened through learning or education, and in order to perform work in the nursing field, it is necessary to have self-leadership to lead oneself with independence and autonomy to perform work efficiently [12].

Self-directed learning is the process of determining learning goals, learning strategies, and learning outcomes by oneself, and it plays an important role in increasing learning motivation and independence, which are essential factors for nursing students to determine and obtain the information and knowledge they need [13]. The fundamental of nursing skills training is to develop the basic nursing competence that nurses should be equipped in clinical practice, and in the past, it has been pursued in the form of passive education that is instructor-centered and imitative practice through instructor's demonstration [14]. The instructor-led fundamental of nursing skill has continuously caused the problem that learners participate in the class without learning or practicing the skills prior to the practical class, which increases the learners' reliance on the instructor during the class and increases the instructor's load of practice guidance. The fundamental of nursing is an integrated curriculum consisting of theoretical and practical classes, and in particular, fundamental of nursing is emphasized as a practical class in which nursing students experience nursing practice for the first time [13].

Learning attitude is to be considered as professors' learning strategy to improve students' learning abilities because it enables them to set their own learning goals, develop appropriate learning strategies, and actively participate in learning activities [15]. This is because they experience and change through the educational process, which helps them to acquire knowledge and skills [16]. As such, peer evaluation improves learning attitudes through a relaxed learning atmosphere, and it also helps to foster critical thinking as students realize and improve their own strengths and weaknesses during the evaluation process, thereby increasing self-critical and self-reflection skills [17].

In this study, the practical education evaluation method using peer evaluation is one of the teaching methods that strengthens the learning effect, and learners will be able to acquire nursing skills by improving their learning attitude dynamically and independently through strengthening their own self-interpretation. It will also provide opportunities to think critically and experience by creating a learning atmosphere that can develop comprehensive thinking skills.

1.2 Research Objective

The specific objectives of this study are as follows

First, to identify the general characteristics of the subjects, their self-leadership and self-directed learning abilities, and their learning attitudes.

Second, to identify the relationship between peer evaluation and self-leadership, self-directed learning ability, and learning attitude.

Third, to identify the factors that influence peer evaluation and self-leadership on self-directed learning ability and learning attitude.

2. Experiment

2.1 Research Subject

This research is a descriptive survey study to determine the effects of fundamental of nursing skills curriculum using peer assessment on self-leadership, self-directed learning ability, and learning attitude.

2.2 Research Methods and Procedures

The subjects of this study were 135 nursing students at a university located in city W, in Gangwon state who understood the purpose of this study and agreed to participate in the study. The sample size for this study was calculated according to G*Power 3.1.9 with a two-tailed significance level (α).05, power $(1-\beta)$. 85, and a medium effect size of .15 in the regression analysis, the sample size was 129. A total of 135 questionnaires were distributed and 124 were returned, but 5 questionnaires were excluded from the analysis due to incompleteness and thus 119 questionnaires were analyzed.

2.3 Research Tools

2.3.1 Peer Evaluation

Peer evaluation was measured using an evaluation checklist developed by the researcher and three professors in charge of basic nursing practice based on the core nursing skills evaluation item protocol published by the Korean Nursing Education Evaluation Center and the basic nursing practice textbook. Peer evaluation was conducted in three rounds. The first evaluation assessed transfusion therapy, the second evaluated drainage enema, and the third evaluated endotracheal aspiration. The final peer evaluation score was calculated by subtracting the total number of points deducted out of a full score of 30, with 2 points deducted for each item on the checklist that was not performed and 1 point deducted for each item performed incompletely. All evaluators were fully familiarized with the peer evaluation method prior to the peer evaluation of core nursing skill performance. The reliability in this study was Cronbach's $\alpha = .88$.

2.3.2 Self-Leadership

The Revised Self-Leadership Questionnaire (RSLQ), developed by Houghton and Neck [18] to measure self-leadership, was used in the study by Credit, 35-item questionnaire using a 5-point scale (1: strongly disagree to 5: strongly agree). The reliability of the instrument was Cronbach's $\alpha = .85$, and the reliability in this study was Cronbach's $\alpha = .90$.

2. 3. 3 Self-Directed Learning Skills

The questionnaire was developed by the Korea Educational Development Institute, to suit the Korean educational environment and was measured using a 5-point scale for 15-items questionnaire. The reliability of the validated instrument for college students/adults was Cronbach's $\alpha = .93$, and the reliability in this study was Cronbach's alpha = .87.

2. 3. 4 Learning Attitude

Learning attitude was measured using a 40-item questionnaire developed by the Korea Educational Development Institute, which was modified and improved by Hwang [12] to measure the learning attitude of nursing students. There are 16 questions in total, with a Likert 5-point scale ranging from 1 for 'never' to 5 for 'always', and the total score ranges from 16 to 80, with higher scores indicating better learning attitudes. The reverse items of the instrument are 2,3,11,15, and the reliability in Hwang [12] study was Cronbach's $\alpha=.84$, and the reliability in this study was Cronbach's alpha = .74.

2. 4 Data Collection

The period of data collection was from August to December 2022, and the research subjects were asked to participate in the survey after fully explaining the purpose of the study, the research method, the period of participation in the study, withdrawals of the study, and privacy and confidentiality in person. Data collection was also conducted in person, and 135 questionnaires were distributed and 119 were analyzed. Five questionnaires were excluded from the analysis due to incompleteness and 11 questionnaires were not collected.

2. 5 Ethical Consideration

Students who are the research subjects are vulnerable and thus appropriate measures were taken to protect them. There was neither pressure nor improper influence during recruitment process and consent process, and the participants were fully informed that they would not be penalized for participating in the study and were asked to complete a consent form. When filling out the questionnaire, questions related to personal information that could identify the subjects were minimized, and the questionnaire was submitted in an anonymous form. The data collected was stored in a locked cabinet to protect the information by limiting access to non-researchers.

2. 6 Research Analyzing Method

The collected data were analyzed using the statistical program SPSS 23.0, and the general characteristics of the study participants were presented in terms of frequencies and percentages using descriptive statistics. The mean, standard deviation, minimum and maximum values of peer assessment, self-leadership, self-directed learning readiness and learning attitude were presented. Correlations between peer evaluation and self-leadership and self-directed learning readiness and learning attitudes were analyzed by Pearson correlation coefficient, and the influence of peer evaluation and self-leadership on self-directed learning readiness and learning attitudes were analyzed by multiple regression analysis. The level of statistical significance was set at $p<.05$.

2. 7 Research Limitations

This study was limited to nursing students at one university and was not compared with other universities. The results of this study cannot be extended to the fundamentals of nursing skills education evaluation using peer evaluation, which was applied only for one semester, because self-leadership self-directed learning ability and learning attitude may change.

3. Results

3.1 General Characteristics of Subjects

Among the nursing students, 106 were female, 89.2% of total students, and 115 were second year students, 96.7%. 81 students lived in the Gyeonggi region of Seoul (68.4%), 55 students enrolled in the program for employment reasons (33.7%), and 105 students enrolled in the program for employment (88.3%). The demographic characteristics of nursing students are shown in Table 1.

Table 1. General characteristics of subjects

Item	Details	Frequency	Percentage(%)
Gender	Male	13	10.8
	Female	106	89.2
Grade	2nd grade	115	96.7
	3rd grade	4	3.3
Place of residence	Seoul	81	68.4
	Gyeonggi		
	Other area	38	31.6
Reason for studying	Suits aptitude	42	35.3
	Recommended by others	19	16.0
	Specialty	25	21.0
	Advantage in employment	33	27.7
Career after graduation	Employment	105	88.3
	Pursue in further studies	1	0.8
	Not decided	13	10.9

3.2. Peer Evaluation, Self-leadership, Self-directed Learning, and Learning Attitude Scores

The mean for peer evaluation was 25.18 ± 1.150 , with a range of 24-29, and the mean for self-leadership was 3.64 ± 0.47 , with a range of 1.82-4.71. Self-directed learning ability had a mean of 3.90 ± 0.54 , with a range of 2.53-5.00, and learning attitude had a mean of 3.62 ± 0.40 , with a range of 2.50-4.31. The results are shown in Table 2.

Table 2. Mean and range of variables

Variables	M±SD	Min-Max
Peer evaluation	25.18±1.150	24-29
Self-leadership	3.64±0.47	1.82-4.71
Self-directed learning	3.90±0.54	2.53-5.00
Learning attitude	3.62±0.40	2.50-4.31

3. 3. Correlations between Peer Evaluation, Self-leadership, Self-directed Learning, Learning Attitudes, and Motivation

The correlations between peer evaluation, self-leadership and self-directed learning ability and learning attitude were: peer evaluation, self-leadership ($r=.283$ $p<.001$), peer evaluation, self-directed learning ability ($r=.243$, $p<.001$), peer evaluation, learning attitude ($r=.258$ $p<.001$), and significantly correlated with self-leadership and self-directed learning ability ($r=.710$, $p<.001$), self-leadership and learning attitude ($r=.386$, $p<.001$), and self-directed learning ability and learning attitude ($r=.410$, $p<.001$). The correlation between peer evaluation, self-leadership, self-directed learning ability, and learning attitude was analyzed by Pearson correlation coefficient, and the results are shown in Table 3.

Table 3. Correlation validation

Item	Peer evaluation	Self-leadership	Self-directed learning	Learning attitude
	r(p)			
Peer evaluation	1			
Self-leadership	.283 ($<.001$)	1		
Self-directed learning	.243 ($<.001$)	.710 ($<.001$)	1	
Learning attitude	.258 ($<.001$)	.386 ($<.001$)	.410 ($<.001$)	1

3. 4. Peer Evaluation and Self-leadership Influence on Self-directed Learning and Learning

Attitudes

In order to identify factors affecting self-directed learning ability and learning attitude, the quantitative variables of peer evaluation and self-leadership and the dependent variables of self-directed learning ability and learning attitude are continuous and were subjected to multiple regression analysis in which variables were selected with a significance probability of .05 and variables were eliminated with a significance probability of .10. The regression model for self-directed learning ability was satisfied with the assumptions of the regression analysis because the tolerance was 0.74~0.83, which was more than 0.1, and the variance inflation factor (VIF) was 1.19~1.35, which was less than 10, so there was no problem of multicollinearity, and it was statistically significant ($F=118.81$, $p<.001$). The regression model for learning attitude also satisfied the assumptions of the regression analysis as the tolerance was 0.70~0.85, which was more than 0.1, and the variance inflation factor (VIF) was 1.17-1.49, which was less than 10, so there was no problem of multicollinearity, and it was statistically significant ($F=48.89$, $p<.001$). The results of the multiple regression analysis to examine the effect of self-directed learning ability and learning attitude are shown in Table 4.

Table 4. Peer evaluation and self-leadership influence on self-directed learning and learning attitudes

Item	Self-directed learning			Learning attitude		
	β	t	p	β	t	p
Peer evaluation	.110	1.08	.282	.122	1.17	.243
Self-leadership	.71	10.90	<.001	.120	1.704	.091
Self-directed learning				.176	1.88	.63
Learning attitude	.168	1.88	.063			
F(p)	118.81(<.001)			48.89(<.001)		
R ²	.504			.295		
Tolerance	0.74~0.83			0.70~0.85		
VIF	1.19~1.35			1.17-1.49		

4. Discussion

This study aimed to identify the effects of fundamentals of nursing skills education using peer evaluation on self-leadership, self-directed learning ability, and learning attitude, and to suggest effective practice education methods. The results of this study showed that self-directed learning ability and learning attitude were positively correlated and should be considered together. Peer evaluation and self-leadership were also found to be positively related to self-directed learning ability and learning attitude.

The peer review process improves nursing students' interpersonal skills and professionalism, thus emphasizing the role of peer review in improving nurses' practical skills [6]. Peer review provides valuable

information for improving academic quality and assessing professionalism [7]. As such, peer review is useful for helping colleagues grow and promoting self-reflection, but it is especially important to ensure anonymity if it is reflected in grades, so it is necessary to use accurate guidelines and tools such as rubrics [6]. In this study, we tried to maximize validity and reliability by using a checklist of items for core basic nursing skills proposed by the Korean Nursing Education Evaluation Center and a rubric that integrated them into knowledge, skills, and attitudes. However, anonymity for peer evaluation could not be guaranteed, so anonymous peer evaluation should be conducted in the future.

Satisfaction with peer review is believed to provide a personally valuable reward for fulfilling the role of an active evaluator rather than a passive recipient, as shown in a study that found a significant difference in self-efficacy. As a behavioral approach that focuses on action [19], peer evaluation is thought to have an intrinsic motivational effect, which is positive for improving self-efficacy. It has been suggested that there is great variation in the potential for self-friendliness among individuals and that it can be stimulated, developed, and maintained through learning or education. The use of peer evaluation to assess practical education was found to be related to nursing students' self-efficacy, self-directed learning, and learning attitudes. This means that critical thinking and learning attitudes through the process of self-feedback to peers are related to self-efficacy and the ability to perform core nursing skills. To introduce peer evaluation in practical education, it is a process to realize one's own weaknesses or to learn from one's peers, not to evaluate the excellence or inadequacy of peers. Positive experiences in peer relationships with similar experience and education levels provide opportunities for nursing development and growth and are an important factor in developing a sense of professional responsibility [20]. Although there are various factors that affect core nursing skills performance, to improve nursing students' performance, it is necessary to focus on the development of various teaching methods and performance improvement as educational strategies for practical education methods rather than increasing the number of practice hours, and to accurately manipulate and measure nursing performance using evaluation tools that can provide feedback. In conclusion, the practice education evaluation method using peer evaluation will help to create a dynamic and systematic learning environment to develop into a student-centered nursing education as a tool for learning stimulation that can actively participate in the learning process. As such, peer evaluation can be used as an alternative to overcome the problems of traditional outcome-based evaluation by integrating the evaluation process, and it can be an alternative strategy for achieving the goals of student education.

The factors affecting self-directed learning ability were peer evaluation, self-leadership, and learning attitude ($F=118.81$, $p<.001$), with an explanatory power of 50.4%. For nursing students, self-directed learning ability is the foundation of self-development ability, which is emphasized as a learning outcome of nursing education, and nursing students need to work in various nursing sites after graduation and respond efficiently and creatively to the rapidly changing healthcare environment, so it is necessary to continue their professional growth by cultivating self-directed learning ability away from closed instruction [21, 22]. Self-directed learning ability is a concept that encompasses the personal, strategic, and social aspects of the learner, and the degree of this ability varies among students, but it can be gradually enhanced through appropriate lesson design by the teacher, and it does not refer to individual independent learning alone, but can be meaningfully enhanced through interaction with peers [23]. Peer assessment is a process-oriented assessment that emphasizes the process of engaging learners with different levels and experiences in learning through two-way interaction, and it is believed that students can develop critical thinking and problem-solving skills. Successful experiences and positive feedback from observing one's own or others' performance can enhance self-efficacy [24], but students may experience both positive and negative feedback while observing clinical skills through peer review [8].

The factors affecting learning attitude were peer evaluation, self-leadership, and self-directed learning ability ($F=48.89$, $p<.001$), and the explanatory power was 29.5%. Learning attitude is a type of behavior that represents beliefs, habits, and circumstances related to learning, and is a continuous and regular response obtained through the experiences of students in the school environment, and is difficult to change once formed, and has the characteristics of long-term fixity and persistence [25]. In instructor-led practical training, the instructor guides the learners one by one, so the learners practice in a very tense state, and the anxiety of not being blamed by the instructor if they make mistakes may occur, but practical training using peer evaluation is thought to form a positive practical environment by cooperating with fellow students who are paired in class and providing mutual feedback freely while forming a good relationship. It is believed that learners will be able to solve problems and acquire sufficient skills through a series of self-directed labs without the need for instructors to guide them step by step through the procedure. Thus, learner-led practice, which has fewer negative situations that may occur in instructor-led classes and ensures autonomy, self-direction, and complementarity among peers, is thought to be an effective direction for basic nursing practice education in promoting learners' self-directed learning attitudes. It is expected that nursing students will receive practical education with educational methods to improve their nursing skill performance, give and receive feedback from each other, and increase their participation in self-directed learning, which will make the basic nursing practice curriculum more effective. The results of this study suggest ways to improve the most basic practical skills that nurses should have, so that they can actively solve the health problems of their subjects, and furthermore, they can be used to strengthen the practical skills of new nurses.

5. Conclusion

This study is a descriptive survey to determine the effects of fundamentals of nursing skills education using peer evaluation on self-leadership, self-directed learning ability, and learning attitude. The factors affecting self-directed learning ability were peer evaluation, self-leadership, and learning attitude ($F=118.81$, $p<.001$), with an explanatory power of 50.4%. The factors affecting learning attitude were peer evaluation, self-leadership, and self-directed learning ability ($F=48.89$, $p<.001$), with an explanatory power of 29.5%. The results of this study showed that it is necessary to apply various teaching methods such as peer evaluation and promote self-leadership to improve self-directed learning ability and learning attitude.

Therefore, we need to apply various teaching and learning methods to improve self-leadership. The expected effect of the educational aspect of this study is to provide an educational direction that can help nursing students to lead a desirable social life with a self-directed and active learning attitude by improving self-leadership by utilizing various teaching methods in improving clinical performance of nursing students. It is important to note that in terms of practical aspects, we believe that the results of practical education using peer evaluation and identifying the impact and extent of self-leadership on self-directed learning ability and learning attitude can be used as a basis for developing programs to further strengthen self-leadership in the future.

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