

Effect of Learning Core Fundamental Nursing Skill with Social Network Service (SNS) for Nursing Students in South Korea

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ABSTRACT

The goal of this study was to investigate the effect of learning core fundamental nursing skills with Social Network Service (SNS) on the learning satisfaction, self-efficacy, and core fundamental nursing skills of nursing students. This study is quasi-experimental study has a non-equivalent control group. The participants of this study were seventy-six junior nursing students placed into experimental (39) and control (37) groups at a regional university. This study selected tracheostomy care as a training item. The intervention concentrated on interactive communication and feedback between instructors and learners using SNS. Through the intervention, the group with SNS showed statistically significant improvement regarding learning satisfaction and self-efficacy. In addition, the experimental group showed significantly higher improvement than the control group regarding self-efficacy. Therefore, learning core fundamental nursing skills using SNS can be an effective way of improving nursing students' learning satisfaction and self-efficacy.

Keywords: nursing skills, nurse education, SNS

INTRODUCTION

After graduation from college, most students who studied nursing go into nursing in the field. Students unskilled in nursing who have a low level of nursing performance skills may negatively impact the overall quality of nursing care. In order to train professional nurses to have the theoretical and practical abilities necessary to provide high-quality nursing care, nursing education institutes should place extra emphasis on practical education so that students can develop nursing skills during their undergraduate years. Previous studies have reported that nursing students' clinical performance and confidence in nursing are low (Han, Cho, & Won, 2014), necessitating educational intervention to improve nursing performance in educational institutes. Due to the connection between the nursing skills students learn in school and actual care-delivery situations, clinical practice is a good way to improve nursing performance skills. However, as a result of the increased attention to patient rights in recent years, most clinical practice for students has been centered on observation rather than actual nursing activities. As a result, schools have become responsible for delivering the majority of practical education for nursing students (Waldner & Olson, 2007). Thus, the roles and responsibilities of schools have been increasing in practical education for nursing students.

Core fundamental nursing skills are the most key and basic skills required for nurses, regardless of field (Park & Lee, 2008). The Korean Accreditation Board of Nursing Education has recommended that nursing students develop proficiency in core fundamental nursing skills as a means of ensuring the quality of nursing education. Training in core fundamental nursing skills is educationally meaningful because it enables nursing students to gain self-confidence in nursing for patients and improves their clinical practice and general performance levels. The nursing practice provided in nursing schools is considered very important in improvement of core fundamental nursing skills (Nam, 2005), and educational institutions have also included conducting nursing practice in their own curriculum. However, although practical measures have been implemented, student rates of participation and their satisfaction with practical education and its educational effects have proved insufficient (Song & Kim, 2015; Yu, Yu, Park, & Son., 2002). As a result, previous studies have researched the factors affecting satisfaction with the

Contribution of this paper to the literature

- Professional nurses should have theoretical and practical abilities necessary to provide high quality nursing care.
- Nursing education has extra emphasis on improving nursing students' nursing skills and motivation through diverse interventions.
- The intervention using SNS can be an effective way of improving nursing students' nursing skills and motivation through interactive communication and feedback.

practice and educational effects in an effort to increase the effectiveness of the practical education. These studies have identified learning satisfaction and self-efficacy as the factors affecting the effectiveness of practical education (Park & Lee, 2008; Song, Kim, & Yu, 2012). These results suggest the necessity for developing an effective educational intervention that increases the proficiency of nursing skills while engaging learners. In response, nursing educators have employed various lecture techniques to enhance student learning and effectiveness (Clifton & Mann, 2011). In addition, domestic and international core fundamental nursing skills curricula have attempted to simulate actual nursing care-delivery situations (Jo, 2014). In short, there have been active studies on new learning methods and attempts to apply them.

In 2015, the smartphone distribution rate was 78.8%, and the usage rate of smartphones by people in their 20s exceeded 96.6% in Korea (Jung, 2016). As smartphone use has become increasingly common, researchers have examined educational methods using smartphones in diverse fields, including nursing (Lee & Kwon, 2016; Lee & Shin, 2016). Smart learning engages learners using smart devices and social networks, thereby inducing autonomous active learning to achieve optimal performance (Lee, 2013). In recent years, this form of learning has been recognized as a new educational paradigm for self-directed learning (Hwang, 2015). Therefore, it is worth considering ways of applying smart learning to practical education to increase educational efficacy in the field of nursing (Hansen, 2011; Lee et al., 2016; Lee & Shin, 2016). A study on the utilization of smartphones in practical nursing education reported that convenient repeated studying and self-examination during the practice process improved the quality of the practice (Kim, 2010; Park, 2011; Sally & Andrew, 2006; Yoo, Yoo, & Lee, 2010).

However, some downsides may accompany the utilization of smartphone videos in practical nursing education. One study found that instructors' feedback was the main factor contributing to positive practical effects (increased performance ability and self-efficacy). Practical education methods that utilize smartphone videos may lack the effective feedback that stems from interaction between instructors and learners in the practice process (Choi & Ha, 2016; Winters et al., 2003). This suggests the need to move away from the existing education methods using smartphones and identify a new method. Additionally, because practical education in schools differs from the actual clinical scene (Cho & Shon, 2015), student interest and immersion in the practice may be reduced (Paik, 2004). Ideally, nurses working in a clinical situation would participate in the students' practical training; however, accomplishing this is difficult due to nurses' busy schedules and the lack of an adequate institutional system.

The addition of a feature that utilizes SNS to the existing practice method, which uses smartphone videos, is worth considering. This new learning method would enable individual interaction between instructors and learners and interaction with other learners through SNS. Furthermore, since the feature is not restricted by time and space, it promotes clinical nurses' participation in practical education and better simulates the clinical setting. The new practical education method that uses SNS is expected to engage learners, increase their participation in the practice, and eventually improve their learning satisfaction and nursing performance skills.

Self-efficacy refers to an individual's belief in his or her ability to successfully perform the actions necessary to achieve his or her goals (Bandura, 1977). Self-efficacy makes learners efficient during practice, so in addition to learning satisfaction, self-efficacy has been reported as one of the factors that improve nursing performance skills (Kendall & Bloomfield, 2005; Nath, Schmidt, & Gunel, 2006; Shin, 2008). Thus, it serves as a good indicator for determining the effectiveness of practical education. On the other hand, clinical thinking disposition is also necessary to improve nursing college students' clinical performance ability (Kwon, 2011). Moreover, self-efficacy has been recognized as an essential type of thinking for problem solving and decision-making in the nursing field (Kim et al., 2002). Therefore, including it as a variable for determining the effect of practical education is appropriate.

In nursing, performance skills are very important; as a result, previous studies have attempted various educational methods to improve nursing students' ability to perform core fundamental nursing skills. However, confirming desired educational effects proves difficult, so a new practical education method based on student demands and the trends of the times is required (Choi & Ha, 2016). Acknowledging the domestic smartphone distribution rate, this study attempts to carry out SNS practical education using smartphone videos in which professors and clinical nurses participate as instructors to create realistic simulations of clinical scenarios and provide effective feedback to learners. We attempt to determine the effect of this new practical educational method

on nursing college students' learning satisfaction, self-efficacy, and ability to perform core fundamental nursing skills.

The purpose of this study is to determine the effect of using SNS to deliver education in core fundamental nursing skills. Specifically, this study aims to investigate the effect of this educational method on nursing students' learning satisfaction, self-efficacy, fundamental nursing skills, and practicum satisfaction.

METHOD

Research Design

This study is a quasi-experimental study that uses a non-equivalent control group and pre-post tests designed to explore the effect of using SNS to teach nursing students core fundamental nursing skills.

Participants

This study was conducted for junior nursing students for two-week periods in April 2016, and subjects were grouped into experimental (40) and control (38) groups. The participants of this study were seventy-six students, separated into experimental (39) and control (37) groups, excluding two participants who did not answer any instrument among whole pre-post instruments. The number of participants was calculated by the finding of prior studies showing that experimental and control groups in a quasi-experimental research design should have participants from 31 to 47 in terms of the number of participants (Lee, 2015; Lee & Kwon, 2016; Lee et al., 2016; Song & Kim, 2015).

Procedure

Consent forms for the research participation were accepted from the participants through the researcher's verbal introduction of the research goal and procedure. Originally, the institute had four classes for junior nursing students in fundamental nursing practicum. However, this study assigns four classes to two groups - the experimental group (1 and 3 classes on Friday) and the control group (2 and 4 classes on Tuesday) - to exclude a contamination of the intervention.

Before the intervention, a pre-test composed of general characteristics, learning satisfaction and core fundamental nursing skills was measured. The experimental group took a core fundamental nursing skill with an intervention using SNS, while the control group took it with a general education. After two weeks of intervention, this study measured the learning satisfaction, self-efficacy, and core fundamental nursing skill competency of both groups.

Intervention: Learning Course Fundamental Nursing Skills Using SNS

To study the effects of SNS on training, we selected tracheostomy care as a training item, one of the 20 core fundamental nursing skills presented by the Korean Accreditation Board of Nursing Education. This is an area with a high level of difficulty and was selected because the subjects of this study were third-year nursing students who had already taken the fundamental nursing practice course. We decided to use an area that was not too easy so that the subjects would not lose interest, as this could make it difficult to accurately identify the effect of the experimental treatment.

Before the experiment, experimental groups 1 and 3 organized their own groups on SNS and prepared to upload their practice videos. Additionally, we invited a clinical nurse to join the Facebook group. The clinical nurse met the following standards to ensure smooth interactions with the students and effective educational effects: (1) no issue using Facebook, (2) insight into current student practice within one year after the completion of student practice, (3) an intensive care unit nurse with experienced in tracheostomy care, and (4) currently working in a general hospital or larger scaled hospital.

In this study, practice using SNS for core fundamental nursing skills differed from the existing practice method in two ways. First, the practice promoted real-time and immediate instructor-learner interactions using SNS. Second, the clinical nurse's participation as an instructor increased the perceived degree to which the clinical setting was simulated.

In the first week of the experiment, the instructor demonstrated tracheostomy care after giving a lecture on the items, procedures, and theoretical knowledge necessary for practice. Each subject in the experimental group recorded a video of their practice using smartphones and then uploaded it to their respective Facebook groups, which were categorized into two experimental groups 1 and 3. Once all of the team members' videos were uploaded to their Facebook groups, over the course of one week the instructor and the clinical nurse checked each video,

evaluated the practice shown in it, and provided feedback by leaving comments on what students did well and where they needed improvement. All students in each Facebook group had had access to all of the comments within that group. We set up a time for each experimental group to interact with the clinical nurse on the SNS and opened a chat room in which they could ask questions directly to the clinical nurse and receive answers. The control group simply underwent general practice. In the second week, both the experimental and control groups performed practice, and the instructor evaluated their performance. After all the experiments were completed, the control group also underwent training for core fundamental nursing skills utilizing Facebook SNS in consideration of ethical aspects.

Instrument

1) Learning satisfaction: The learning satisfaction measurement tool consisted of 10 items, which included seven items that used Keller (1987)'s satisfaction tool, modified and supplemented by Jung (2005). It consisted of a five-point Likert scale of which 1 indicated "strongly disagree" and 5 indicated "strongly agree." The higher the score, the higher the learning satisfaction. Jung's (2005) study had a Cronbach's alpha reliability score of 0.75. For this study, it was 0.84 before the experiment and 0.88 after the experiment.

2) Self-efficacy: The self-efficacy tool developed by Ayres (2005) was used, which consists of 10 items on a seven-point scale from 1, "strongly disagree," to 7, "strongly agree." The higher the score, the higher the self-efficacy in communication. When this scale was developed, it was given a Cronbach's alpha score of = 0.92. For this study, it was 0.89 before the experiment and 0.95 after the experiment.

3) Fundamental Nursing Skills: We evaluated the performance of core fundamental nursing skills based on the revised protocols for core nursing skills of "tracheostomy care" and "endotracheal suction," according to the Korean Accreditation Board of Nursing Education (2015). For each step of the protocols, the instructor rated the students' performance as 0 ("not performed"), 1 ("unskilled"), and 2 ("performed well"). The higher the score, the higher the performance of core fundamental nursing skills. Cronbach's alpha scores for the evaluations were 0.98 before the experiment and 0.99 after the experiment.

We carried out further analysis of the satisfaction levels of practicing core fundamental nursing skills. The subjects evaluated these items based on a 10-point Likert scale from 1, "strongly disagree," to 10, "strongly agree."

Data Analysis

The collected data were analyzed using the SPSS statistical program using Windows version 21.0. The general characteristics, learning satisfaction, self-efficacy, and performance of core fundamental nursing skills of the subjects were obtained using descriptive statistics. The effect of the experimental treatment and the reliability of the instrument were obtained in terms of a t-test and Cronbach's alpha, respectively.

Ethical Considerations

We directly explained the purpose and method of the study to the subjects, as well as the benefits, potential risks, and inconveniences that might be involved in the study. We informed them that their participation was voluntary, that they could withdraw from the study at any time, and that their participation would not affect their official test scores. Only those who voluntarily agreed by written consent were included as subjects. This study was approved by the Institutional Review Board (IRB) in a South Korean regional university (KNU_IRB_2015_58).

RESULTS

Demographic Information

The experimental group consisted of 42.1% females (32 subjects) and 9.2% males (seven subjects), and the control group consisted of 46.1% females (35 subjects) and 2.6% males (two subjects), as presented in [Table 1](#). The average age was 20.74 years in the experimental group and 21.16 years in the control group. In terms of the perceived grade, most of the subjects answered "in the middle" in both the experimental and the control group (30.3% and 35.5%, respectively). Twenty-one subjects in the experimental group (27.6%) and 26 subjects in the control group (34.2%) answered that their motivation for entering the nursing college was ease of employment and others' recommendations. Before the experiment, there were no statistically significant differences between the experimental and control groups in terms of gender, age, perceived grades, and motivation for entering the nursing college.

Table 1. Characteristics of the participants (N=76)

Variables	Category	Experimental (N=39)	Control (N=37)	t(p)/ $\chi^2(p)$
		m(SD) or N(%)	m(SD) or N(%)	
Gender	Female	32(42.1)	35(46.1)	2.861(.072)
	Male	7(9.2)	2(2.6)	
Age		20.74(1.12)	21.16(3.99)	- .629(.531)
Academic achievement	Low	11(14.5)	8(10.5)	2.028(.160)
	Middle	23(30.3)	27(35.5)	
	High	5(6.6)	2(2.6)	
Entrance Motivation for Nursing School	Aptitude/Interest	14(18.4)	8(10.5)	2.260(.104)
	School Grade/Job	21(27.6)	26(34.2)	
	Calling	4(5.3)	3(3.9)	

Table 2. Effects of using SNS in core fundamental nursing practicum on learning satisfaction, self-efficacy, critical thinking preposition, self-appraisal and practice competency among nursing students (N=75)

Item	Group	Pre intervention	Post intervention	Within group difference t(p)
Learning satisfaction	Exp.*	3.88(.42)	4.06(.52)	-2.712(.010)
	Cont.**	3.81(.45)	3.93(.40)	
Between group difference	t(p)	.735(.465)	1.160(.250)	
Self-efficacy	Exp.*	5.31(.76)	5.71(.74)	-3.862(<.001)
	Cont.**	5.15(.72)	5.14(.87)	
Between group difference	t(p)	.948(.346)	3.093(.003)	
Core basic nursing practice competency	Exp.*	1.44(.39)	1.49(.47)	-1.942(.060)
	Cont.**	1.40(.39)	1.45(.44)	
Between group difference	t(p)	.424(.673)	.403(.688)	

* Exp. = Experimental group(N=39), ** Cont. = Control group(N=37)

Table 3. Additional analysis

Item	Group	Pre intervention	Post intervention	Within group difference t(p)
Satisfaction with practice	Exp.*	7.15(1.77)	7.77(1.61)	-2.403(.021)
	Cont.**	7.11(1.10)	7.11(1.41)	
Between group difference	t(p)	.136(.892)	1.898(.062)	

* Exp. = Experimental group (N=39), ** Cont. = Control group (N=37)

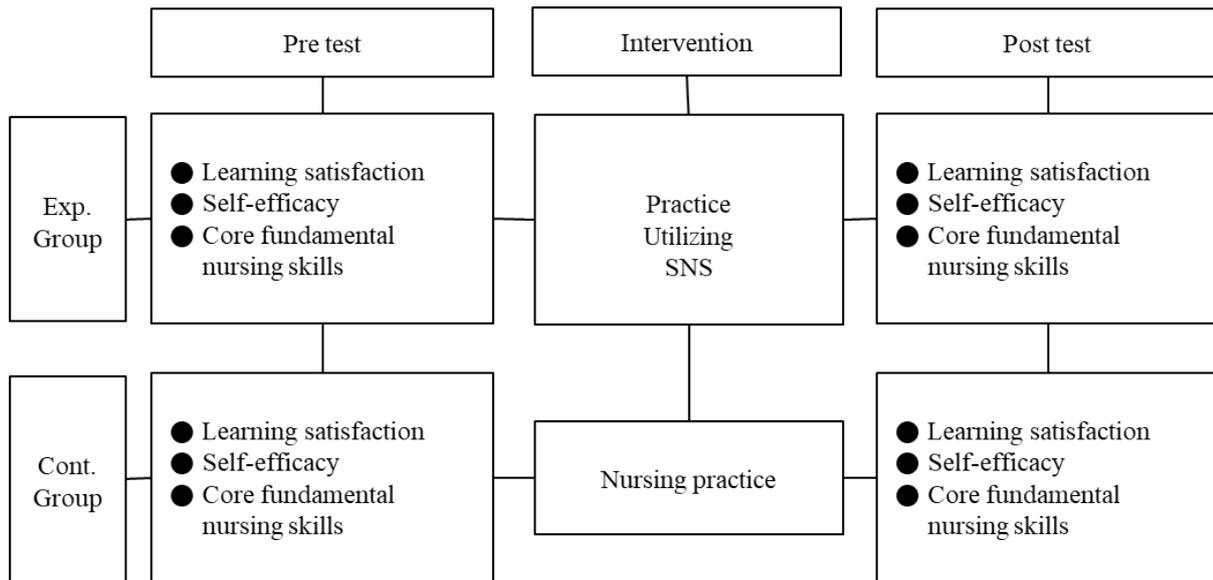


Figure 1. Research process step

Effect of the Intervention

Learning satisfaction

Before the intervention, the learning satisfaction level for the experimental and control groups was homogeneous ($t=.735, p=.465$). After the intervention, there was no statistically significant difference between the experimental group and the control group ($t=1.160, p=.250$). Paired sample t -test results for each group indicated that the experimental group had statistically significant improvement, from 3.88 to 4.06 in terms of the learning satisfaction ($t=-2.712, p=.010$), while control group had no significant improvement ($t=-1.593, p=.120$).

Self-efficacy

Before the intervention, the self-efficacy level for the two groups was homogeneous ($t=.948, p=.346$). After the intervention, the mean score ($m=5.71$) of the experimental group was significantly higher than that ($m=5.14$) of the control group ($t=3.093, p=.003$). There was no statistically significant difference between the experimental group and the control group ($t=1.160, p=.250$). In addition, paired sample t -test results for each group indicated that the experimental group had statistically significant improvement from 5.31 to 5.71 in terms of the self-efficacy ($t=3.862, p<.001$) while the control group had no significant improvement ($t=0.85, p=.933$).

Core fundamental nursing skills

Before the intervention, instructors' evaluation of the nursing skills for each group was homogeneous ($t=.424, p=.673$). After the intervention, there was no difference between the two groups ($t=.403, p=.688$). In addition, paired sample t -test results for each group indicated that the experimental group had no significant improvement ($t=-1.942, p=.060$).

Additional analysis

Practicum satisfaction: Before the intervention, the practicum satisfaction level for each group was homogeneous ($t=.136, p=.892$). After the invention, there was no statistically significant difference between the experimental group and the control group regarding practicum satisfaction ($t=1.898, p=.062$). However, the practicum satisfaction of the experimental group was significantly improved from 7.15 to 7.77 through the intervention ($t=2.403, p=.021$) while that of the control group showed no significant improvement.

DISCUSSION

This study employs a quasi-experimental design to investigate the effects of learning core fundamental nursing skills using SNS. The results indicate no significant difference in learning satisfaction between the experimental

and control groups before and after the intervention. However, the experimental group showed a significant increase after intervention, while the control group did not show any significant difference. These results are consistent with findings showing that self-directed practice using smartphone videos does not lead to any significant difference in learning satisfaction between the two groups (Lee & Shin, 2016). This finding resulted from the fact that the subjects of this study were provided the standardized protocol presented by the Korean Accreditation Board of Nursing Education during the practice. Moreover, they regularly participated in strict self-directed practice. In short, they had already received a certain degree of nursing skills training, so regular practical education was an opportunity for repeated learning. Therefore, one can infer that both groups had significant recognition of learning effects even before the experiment and had high learning satisfaction through the standardized protocol.

Since the learning satisfaction of the experimental and control groups was high before the experiment (3.88 and 3.81, respectively), researchers expected that the increase would not be great. However, the change after the intervention using SNS was greater in the experimental group, which demonstrates the effectiveness of the experimental treatment (Lee et al., 2016; Yeun, 1999). The increased learning satisfaction after the intervention applying video recordings may have resulted from the advantage of the audiovisual equipment. The study using the smartphone video recording showed the highest results in terms of learning satisfaction regarding the following factor (Kim, 2008): "It was good to be provided the re-learning opportunity to reflect on my practice process through self-observation." Self-observation using audiovisual equipment has been reported as an efficient way to change already established behavior (Bauman, Cook, & Larson, 1981; Hartley, Bray, & Kehle, 1998). Likewise, the re-imagined practice process can provide immediate feedback to learners, so it was inferred that the experimental group's learning satisfaction increased more than the control group's for this reason. Addressing deficiencies in improving nursing skill performance requires a change in behavior. Therefore, the positive effect of smartphone video recording combined with practical education will lead to the effective correction of learners' behaviors. In particular, in this study, clinical nurses directly joined the Facebook group and provided individual feedback on the videos of the students' practice. This new practical education may have increased students' learning satisfaction by motivating them to have curiosity about the clinical field and encouraged them to immerse themselves in learning before encountering clinical practice.

The self-efficacy levels of the two groups were the same before the intervention, but the self-efficacy of the experimental group was significantly higher than that of the control group after the intervention. In addition, in terms of changes within the groups, the experimental group showed a significant increase after the experiment, while the control group did not show any significant change. These results suggest that the practice method for core fundamental nursing skills using SNS in this study effectively increased the self-efficacy of nursing college students. These results are consistent with the results of the previous study, which demonstrated that a self-evaluation learning method using video recording and video utilization increased nursing students' self-efficacy in problem solving processes (Choi & Ha, 2016; Sally & Andrew, 2006; Song & Kim, 2015).

A previous study reported that insufficient time to feel a sense of accomplishment resulting from checking of the practice process and the correcting of mistakes after video recording may inhibit effective learning (Lee & Kwon, 2016). Therefore, practical education should provide students with enough time to identify and accommodate their improvements after self-learning. In this study, the experimental group was given one week until the next practice time after receiving feedback from instructors and clinical nurses using SNS. Thus, they had enough time to improve their core fundamental nursing skills. Having sufficient time to examine and learn from their practice process increased nursing students' self-efficacy, leading to an improvement in the level of nursing skills. Furthermore, the instructors' feedback using SNS not only helped self-learning but also enabled individualized learning. Additionally, it gave the group members the opportunity for repeated learning.

This study analyzed the ability to perform core fundamental nursing skills based on instructors' evaluations; there was no significant difference between the two groups. Consistent with this study's results, previous studies using smartphone videos and video recording showed no significant difference in performance ability between experimental and control groups (Lee & Kwon, 2016; Song & Kim, 2015). A previous study reported that instructors' feedback is the main variable in performance ability (Choi & Ha, 2016; Lee & Shin, 2016; Winters et al., 2003). The practical education method in this study had the following advantages: 1) the instructors provided individual feedback, and 2) the instructors interacted with the learners by answering their questions. However, this method did not lead to a difference between the two groups in core fundamental nursing skills. This may be because students already had relatively high nursing skill performance scores (1.44 and 1.40 out of 2.00, respectively), making a significant difference between the two groups unlikely. Therefore, it is necessary to select a tool that can identify the difference in increased score when evaluating the ability to perform nursing skills.

Additional analysis showed no significant difference in practicum satisfaction between the experimental and control groups. However, the satisfaction of the experimental group was significantly increased, while the control group did not show any change. The findings also show that the higher the practicum satisfaction, the higher the

clinical performance ability (Yu, 2015). Therefore, increased practicum satisfaction is considered a desired result. Students accepted the practical education method using SNS involving clinical nurses' participation as a new learning method. Moreover, free interaction and instant online feedback in the practice process motivated all students to proactively participate in the practice, thereby increasing their practicum satisfaction.

In conclusion, the practical education of core fundamental nursing skills using SNS in this study proved effective in increasing students' learning satisfaction, self-efficacy, and practicum satisfaction. The significance of this study is that it enhanced educational effects by enabling the mutual active communication utilizing SNS. This study focused on the advantages of SNS based on the belief that instant feedback and self-learning through repeated learning would enhance the effectiveness of practical education in core fundamental nursing skills. We confirmed that the education method used in this study could serve as an effective new education method in core fundamental nursing skills. In addition, this study demonstrated the potential for the gradual expansion and development of this method, since using SNS is easy and accessible in terms of practical education in core fundamental nursing skills for college students in the smartphone generation.

CONCLUSION AND RECOMMENDATION

This paper explains the results of a quasi-nonequivalent control group study examining the effects of using smartphone SNS to deliver practical education in core fundamental nursing skills to analyze nursing college students' learning satisfaction, self-efficacy, critical thinking disposition, and ability to perform core fundamental nursing skills.

This practical education method involving interaction with instructors and clinical nurses using SNS had significantly positive effect for learning satisfaction and self-efficacy. This may have resulted from the fact that instructors' and clinical nurses' participation in practical education engaged students, and individual feedback on the practice process led to active interaction between the instructors and learners. Moreover, repeated video watching and reviewing feedback content may have increased student self-efficacy in terms of performance ability, thereby improving performance. We confirmed that the intervention applied in this study is a useful way to improve nursing students' learning satisfaction and self-efficacy. Therefore, we believe that this method can be used as a way to improve students' ability to perform nursing skills in an educational environment currently undergoing significant change and development.

Based on the results of this study, we propose the following: first, a follow-up study must be conducted to verify whether the learning method using SNS is effective in core fundamental nursing skills with different levels of difficulty; second, we suggest a follow-up study involving more in-service nurses that more realistically simulates the actual clinical environment.

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