ORIGINAL RESEARCH

Effects of a collaborative clinical practicum on clinical practice ability and teaching effectiveness among nursing students

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Received: May 18, 2013 **Accepted:** June 6, 2013 **Online Published:** August 5, 2013
DOI: 10.5430/jnep.v3n12p143 **URL:** http://dx.doi.org/10.5430/jnep.v3n12p143

Abstract

Background: This study investigates the effects of a collaborative clinical practicum for adult health nursing on clinical practice ability and teaching effectiveness among nursing students, using a non-equivalent control group pre-test-post-test design.

Methods: Participants were 52 junior nursing students taking a two-credit clinical practicum course for adult health nursing at a nursing college in South Korea. Students in the two intervention groups participated in a collaborative clinical practicum, which included a 16- or 32-h preceptorship with the usual practicum, whereas those in the control group received the usual practicum by only the instructor.

Results: The intervention group with a 32-h preceptorship had the highest score for clinical practice ability and teaching effectiveness.

Conclusions: The results justify an increase in the number of preceptorship hours for junior undergraduate students in an adult nursing practicum.

Key words

Preceptorship, Clinical practice, Teaching effectiveness

1 Introduction

Clinical practice is an essential component and a major sector of nursing education worldwide [1]. Nursing knowledge is associated with clinical practice, and academic educational achievements are attained through the nature of the applied science. One goal of nursing student clinical experience is to link theory in the classroom to real life. However, direct clinical practices have decreased for students who require a change in clinical practicum [2].

Collaboration between academics and clinicians is an essential component of nursing education [3]. Working together in a facilitative and collaborative clinical teaching partnership enhances the support for student clinical practicum [4].

Collaborative clinical teaching models such as Dedicated Education Units (DEU) have been applied in clinical teaching for undergraduate students in Australia [3-5] and the US [6-11]. However, its use has been limited in Korea.

Traditional faculty and preceptorship models have been used mostly in clinical practicum among Korean undergraduate students. The type of practicum teaching in four-year undergraduate nursing education varies slightly across Korean universities. For senior nursing students, practice teaching is performed mainly by preceptors associated with the hospital; for junior students, practice teaching is conducted mainly by instructors at the nursing college [8]. Students have less opportunity for direct clinical nursing activity when taught by instructors than preceptors. Thus, they do not receive much nursing practice knowledge, but this has changed recently [9].

It is necessary to improve clinical practice capability and teaching effectiveness by reflecting various medical demands and environmental changes in clinical practice education in nursing. In the US, nursing students are required to complete facility-based training accredited by the Health Insurance Portability and Accountability Act, while their Korean counterparts have to complete such training accredited by the Joint Commission International and electronic medical record training. Such training helps to improve the quality of patient care and enhance patient safety.

Many studies examined nursing education components in clinical practice, including clinical practice capability of nursing students regarding practicum teaching types, such as preceptorships and clinical education partnerships [14, 15], and teaching effectiveness [16, 17]. However, their participants were mostly senior nursing students, and they did not compare the educational effects of different types of teaching. Consequently, little is known about the most effective approach for teaching junior Korean nursing students. In addition, most previous studies [3- 11] on clinical practice of nursing students have been conducted in Western countries. Hence, there is insufficient information to determine the most appropriate method for improving clinical practice ability and teaching effectiveness in Korea. The present pilot study examined the effects of a collaborative clinical practicum teaching type on clinical practice ability and teaching effectiveness among Korean junior nursing students.

Hypotheses

Clinical practice ability and teaching effectiveness would be higher for junior nursing students receiving practice teaching mainly from preceptors than for those receiving practice teaching mainly from instructors.

2 Subjects and methods

2.1 Study design

A non-equivalent control group pre-test–post-test design was used. The independent variable was practice teaching type, and the dependent variables were clinical practice ability and teaching effectiveness (see Table 1). Intervention groups 1 and 2 received 16- and 32-h practice teaching, respectively, performed mainly by preceptors over a 90-h span. The control group received traditional teaching taught by an instructor only.

Table 1. Study Design and Practicum Teaching Types

	Pre-test	Intervention	Post-test
Control group †	O		O
Intervention group 1‡	O	X1	O
Intervention group 2§	O	X2	O

† Control group, teaching by an instructor only (no preceptor), for 90 h (existing practice)

‡ Intervention group 1, taught by a preceptor for 16 h and an instructor for 74 h (X1)

§ Intervention group 2, taught by a preceptor for 32 h and an instructor for 58 h (X2)

2.2 Participants

Fifty-two junior students taking a two-credit clinical practicum course for adult health nursing were recruited from a nursing college in South Korea. They were allocated to intervention groups 1 (n = 18) or 2 (n = 17) or the control group (n = 17). The significance threshold was 0.05, and effect size (f) was 0.37 in the analysis of variance (ANOVA). Power (1 − β) was 81.4%, as determined using G*Power 3.1, which was sufficient. Three instructors and 10 preceptors were involved in this study. Each participant was informed of the purpose of the study and voluntarily signed an informed consent form.

2.3 Intervention procedures

Table 2 shows the general contents of the on-site practicum. Preceptor assignment and preceptorship focused on nursing care and skills, using nursing processes, in the intervention groups. The preceptorship included a one-on-one relationship between the preceptor and the student. Surveys on general characteristics, clinical practice ability, and teaching effectiveness were conducted before and after the practicum.

Table 2. Contents of Clinical Practice

Contents of Clinical Practice
• Orientation/Patient Assignment
• Reading of Medical record, Kardex
• E-box/Medication/Dressing Cart
• Nursing Assessment (diagnosis, signs and symptoms, medication, and laboratory data
• and diagnostic tests)
• Basic Nursing Skills
• Nursing Problem: Case Presentation and Nursing Diagnosis
• Observation/Visiting Diagnostic Test Lab.
• Nursing Process: Assessment and Problem
• Nursing Process: Nursing Plan
• Nursing Process: Implementation
• Nursing Process: Nursing Evaluation and Re-assessment
• Understanding of Special Patients
• Implementation of Clinical Practice and skills (Teaching, observation & implementation): Preceptor Assignment and Preceptorship Focused on Nursing Care and Skills Using Nursing Processes

2.4 Measurements

Clinical practice ability. A 25-item tool with a 5-point scale developed by Lee et al. (1991) [18] was used to assess clinical practice ability. The questions were related to direct nursing care and included measurement of vital signs, preoperative and postoperative care, formation of rapport with the patient, infection control, cooperation with relevant departments, etc. Higher scores indicated greater nursing practice capability. In this study, Cronbach's alpha was 0.94.

Teaching effectiveness. Teaching effectiveness was measured using a 42-item tool reconstructed by Kim et al. [19] based on a tool developed by Reeve [20] and Stritter, Hain, and Grimes [21]. It consisted of 5 subscales: professional knowledge and capability (5 items), interpersonal relationships and communication (13 items), usefulness as helpers (7 items), encouragement and support (5 items), and teaching methods and assessment (12 items). Higher scores indicated greater teaching effectiveness. Cronbach's alpha was 0.96 in the study by Kim et al. [19] and 0.95 in this study.

2.5 Data analysis

Analyses were performed using SPSS 14.0 for Windows. General characteristics, clinical practice ability, and teaching effectiveness were analyzed with descriptive statistics (mean and *SD*). The homogeneity and differences in clinical practice ability and teaching effectiveness of the participants as assessed by practice teaching types were analyzed using an ANOVA. Between-group differences were analyzed using the post hoc Scheffé test.

3 Results

3.1 Homogeneity test among participants

The average age of nursing students who participated in this study was 21.8 (± 2.1) years. There were no pre-intervention between-group differences in clinical practice ability and teaching effectiveness ($F = 2.908$, $p = .064$; $F = 1.752$, $p = .184$) (see Table 3). The average length of the teaching careers of the instructors and preceptors who taught nursing students was 40 and 47 months, respectively.

Table 3. Homogeneity Test Among the Three Groups

Variables	Total	CG† (n = 17)	IG1‡ (n = 18)	IG2§ (n = 17)	*F*	*p*
Age	21.77(2.10)	21.76(2.36)	21.78(1.70)	21.76(2.33)	.000	1.000
Ability for clinical practice	2.89(0.80)	2.80(0.73)	2.64(0.93)	3.25(0.61)	2.908	.064
Teaching effectiveness	4.08(0.37)	3.98(0.41)	4.04(0.39)	4.21(0.27)	1.752	.184

† CG: Control group, teaching by an instructor only (no preceptor), for 90 h (existing practice)

‡ IG1: Intervention group 1, taught by a preceptor for 16 h and an instructor for 74 h

§ IG2: Intervention group 2, taught by a preceptor for 32 h and an instructor for 58 h

3.2 Differences in clinical practice ability by practicum teaching types

The average clinical practice ability scores of students were 2.89 (± 0.80) and 2.90 (±0.85) before and after the clinical practice, respectively. The differences in the increase after the clinical practice were statistically significant among the three groups ($F = 4.533$, $p = .016$). In the post hoc analysis, intervention group 2 (3.37 ± 0.53) had a higher clinical practice ability than the control group (2.60 ± 0.81).

The following detailed items showed a statistically significant difference among groups in the analysis: measurement of vital signs ($F = 4.019$, $p = .024$), medication nursing ($F = 3.643$, $p = .034$), care of wound and pressure sores-dressing ($F = 3.641$, $p = .034$), hot and cold therapy ($F = 3.643$, $p = .034$), use of a blood glucose meter ($F = 4.091$, $p = .023$), measurement and record of intake and output ($F = 4.899$, $p = .011$), postoperative care ($F = 3.369$, $p = .043$), follow-up care ($F = 3.496$, $p = .038$), nursing before and after clinical examination (diagnosis examination) ($F = 3.272$, $p = .046$), and lifestyle education ($F = 4.147$, $p = .022$) (see Table 4).

3.3 Differences in teaching effectiveness by practicum teaching types

Students who were educated by clinical practice instructors had increased teaching effectiveness scores after clinical practice (4.13 ± 0.50 > 4.07 ± 0.37), and there was a significant difference among all three groups ($F = 3.416$, $p = .041$). Post hoc analysis showed that intervention group 2 tended to have higher teaching effectiveness scores (4.38 ± 0.40) than intervention group 1 (4.05 ± 0.57) and the control group (3.97 ± 0.45) ($p = .059$ and $p = .069$, respectively). Scores on the subscales 'interpersonal relationships and communication' ($F = 3.826$; $p = .029$) and 'encouragement and support' ($F = 3.178$, $p = .050$) significantly differed between the three groups (see Table 5).

4 Discussion

Significant differences in clinical practice ability were observed in intervention groups. Specifically, intervention group 2, educated by a preceptor for 32 h, showed higher clinical practice capability than the control group and intervention group 1. This implies that students' nursing practice capability is directly related to teaching time by a preceptor, which is consistent with previous studies showing that the preceptorship improved direct nursing and nursing practice capability [2, 15, 22].

Table 4. Differences in Clinical Practice Ability by Practicum Teaching Types

Variables		Total (n = 52)	CG[a] (n = 17)	IG1[b] (n = 18)	IG2[c] (n = 17)	*F*	*p*	Post-hoc
Subcategories								
Vital check	baseline	3.35(0.71)	3.24(0.83)	3.22(0.73)	3.59(0.51)	4.019	.024	c> a (p = .024)
	post-test	4.25(0.71)	4.24(0.75)	3.94(0.73)	4.59(0.51)			
Pathophysiology	baseline	3.35(0.71)	3.24(0.83)	3.22(0.73)	3.59(0.50)	0.920	.405	
	post-test	3.71(0.63)	3.65(0.60)	3.60(0.60)	3.88(0.69)			
Admission education	baseline	2.27(1.47)	2.00(1.41)	2.06(1.69)	2.76(1.20)	2.433	.098	
	post-test	2.10(1.48)	1.65(1.45)	1.94(1.66)	2.71(1.16)			
Discharge education	baseline	2.13(1.45)	1.94(1.39)	1.72(1.60)	2.76(1.20)	2.826	.069	
	post-test	2.12(1.51)	1.59(1.41)	2.00(1.71)	2.76(1.20)			
Bedside care	baseline	3.19(1.08)	3.41(0.61)	2.61(1.24)	3.59(1.06)	1.704	.192	
	post-test	3.17(1.23)	3.24(1.09)	2.78(1.62)	3.53(0.21)			
Medication	baseline	2.27(1.55)	2.18(1.74)	1.94(1.76)	2.71(0.99)	3.643	.034	c > a (p = .045)
	post-test	2.38(1.47)	1.88(1.58)	2.17(1.65)	3.12(0.78)			
IV preparation and Care	baseline	2.17(1.54)	2.70(0.98)	1.83(1.65)	2.71(0.98)	1.817	.173	
	post-test	2.23(1.49)	1.71(1.57)	2.33(1.57)	2.65(1.22)			
Dressing	baseline	1.87(1.57)	1.35(1.50)	1.94(1.80)	2.29(1.31)	3.641	.034	c > a (p = .054)
	post-test	1.83(1.52)	1.06(1.30)	2.11(1.68)	2.29(1.31)			
Hot and cold therapy	baseline	3.02(1.32)	3.06(1.30)	2.78(1.63)	3.24(0.97)	3.943	.026	c > a (p = .026)
	post-test	2.98(1.42)	2.35(1.66)	2.94(1.47)	3.65(0.70)			
Nursing record	baseline	3.21(0.84)	3.40(0.87)	2.94(0.94)	3.41(0.87)	0.658	.523	
	post-test	3.00(1.17)	3.00(1.22)	2.78(1.16)	3.24(1.14)			
E-box medication	baseline	2.63(0.92)	2.82(1.01)	2.39(0.98)	2.82(1.01)	2.125	.130	
	post-test	2.83(1.02)	2.59(1.27)	2.67(0.90)	3.24(0.75)			
Using a glucometer	baseline	4.19(0.77)	4.29(0.59)	3.83(0.99)	4.47(0.51)	4.091	.023	c > b (p = .023)
	post-test	4.21(0.89)	4.18(0.64)	3.15(1.15)	4.65(0.61)			
Intake & Output	baseline	2.87(1.43)	2.82(1.24)	2.39(1.75)	3.41(1.06)	4.899	.011	c > a (p = .011)
	post-test	2.88(1.53)	2.12(1.62)	2.89(1.45)	3.65(1.17)			
Pre-op care	baseline	2.02(1.48)	2.65(1.27)	1.72(1.60)	2.65(1.22)	2.925	.063	
	post-test	2.08(1.55)	1.53(1.54)	2.17(1.82)	2.65(1.16)			
Post-op care	baseline	1.98(1.43)	1.65(1.37)	1.72(1.60)	2.59(1.18)	3.369	.043	c > a (p = .043)
	post-test	2.12(1.59)	1.41(1.42)	2.17(1.82)	2.76(1.25)			
Preparation care	baseline	2.13(1.50)	2.65(1.27)	1.72(1.60)	2.65(1.22)	2.452	.097	
	post-test	2.12(1.59)	1.53(1.54)	2.11(1.77)	2.65(1.16)			
Follow-up care	baseline	2.08(1.51)	1.76(1.56)	1.89(1.68)	2.59(1.18)	3.496	.038	c > a (p = .039)
	post-test	2.17(1.57)	1.53(1.55)	2.11(1.78)	2.88(1.05)			
Physical exam	baseline	2.75(0.92)	2.88(0.69)	2.61(1.24)	2.88(0.69)	1.144	.327	
	post-test	2.73(1.30)	2.59(1.46)	2.50(1.54)	3.12(0.69)			
Building rapport	baseline	3.77(0.75)	4.06(0.65)	3.78(0.73)	4.06(0.65)	1.725	.189	
	post-test	3.88(0.94)	4.06(0.75)	3.56(1.14)	4.06(0.82)			
Kardex/chart reading	baseline	4.04(0.71)	4.18(0.72)	4.00(0.76)	4.18(0.72)	1.821	.173	
	post-test	4.06(0.72)	4.29(0.58)	3.83(0.78)	4.06(0.74)			
Diagnosis exam	baseline	2.48(1.43)	2.35(1.41)	2.44(1.72)	2.65(1.17)	3.272	.046	c > a (p = .047)
	post-test	2.06(1.61)	1.41(1.62)	2.00(1.68)	2.76(1.30)			
Infection care	baseline	3.94(0.89)	4.12(0.78)	3.78(1.16)	4.12(0.78)	0.259	.773	
	post-test	3.88(1.23)	3.76(1.52)	3.83(1.15)	4.06(1.02)			

(Table continued on page 148)

Table 4. (continued.)

Variables		Total (n = 52)	CG[a] (n = 17)	IG1[b] (n = 18)	IG2[c] (n = 17)	*F*	*p*	Post-hoc
Lifestyle education	baseline	3.44(1.06)	3.65(0.70)	3.06(1.55)	3.65(0.49)	4.147	.022	c > b (p = .031)
	post-test	3.88(1.23)	3.76(1.52)	3.83(1.15)	4.06(1.03)			
Communication with patient's family	baseline	3.70(0.95)	3.82(0.88)	3.67(1.08)	3.82(0.88)	1.829	.171	
	post-test	3.69(0.96)	3.71(0.92)	3.39(1.09)	4.00(0.79)			
Cooperation with other department	baseline	2.60(1.56)	3.35(0.86)	1.89(1.77)	3.35(0.86)	2.669	.079	
	post-test	2.77(1.46)	2.94(1.14)	2.17(1.68)	3.24(1.34)			
Total	baseline	2.89(0.80)	2.80(0.73)	2.64(0.93)	3.25(0.61)	4.533	.016	c > a (p = .024) c > b (p = .078)
	post-test	2.90(0.85)	2.60(0.81)	2.75(0.97)	3.37(0.53)			

Table 5. Differences in Teaching Effectiveness by Practicum Teaching Types

Variables		Total (n = 52)	CG[a] (n = 17)	IG1[b] (n = 18)	IG2[c] (n = 17)	*F*	*p*	Post-hoc
Subfactors								
Professional knowledge and competence	baseline	4.13(0.41)	4.05(0.42)	4.18(0.42)	4.15(0.40)	2.328	.108	
	post-test	4.17(0.48)	4.05(0.44)	4.09(0.53)	4.36(0.42)			
Interpersonal relationships and communication	baseline	3.97(0.40)	3.88(0.46)	3.97(0.43)	4.07(0.28)	3.826	.029	c > a (p = .036)
	post-test	4.13(0.57)	3.92(0.47)	4.05(0.57)	4.41(0.56)			
Availability as a supporter	baseline	4.13(0.42)	4.07(0.46)	4.12(0.47)	4.21(0.31)	1.880	.163	
	post-test	4.42(0.36)	4.10(0.62)	4.09(0.67)	4.42(0.36)			
Encourage and support	baseline	4.02(0.51)	3.86(0.52)	3.92(0.48)	4.27(0.45)	3.178	.050	c > b (p = .089)
	post-test	4.07(0.56)	3.95(0.48)	3.93(0.58)	4.34(0.54)			
Teaching method and evaluation	baseline	4.16(0.36)	4.06(0.35)	4.08(0.39)	4.33(0.30)	2.807	.070	c > a (p = .083)
	post-test	4.12(0.52)	3.95(0.43)	4.06(0.62)	4.35(0.43)			
Total	baseline	4.08(0.37)	3.98(0.41)	4.04(0.39)	4.21(0.27)	3.416	.041	c > a (p = .059) c > b (p = .069)
	post-test	4.13(0.50)	3.97(0.45)	4.05(0.57)	4.38(0.40)			

Measurement of vital signs, medication, care of wound and pressure sores-dressing, hot and cold therapy, use of a blood glucose meter, measurement and record of intake and output, postoperative care, follow-up care, nursing before and after clinical examination, and lifestyle education significantly differed across the three types of practicum teaching. Because there were limitations with respect to the direct treatment of a patient or nursing activities with an instructor associated with the nursing college, these issues were complemented by a preceptor, which resulted in the differences noted. Therefore, it is believed that even partial utilization of a preceptor could improve clinical practice capability.

Differences in teaching effectiveness across the types of practicum teaching were also observed. Intervention group 2 (32 h of teaching by a preceptor) tended to score higher than intervention group 1 (16 h of teaching by a preceptor) and the control group (no teaching by a preceptor). This finding accords with the results of previous studies that examined the teaching effectiveness of preceptorship [16, 23]. The areas in which an instructor was not adequate were complemented by a preceptor; thus, it is hypothesized that under these conditions, nursing students experienced a higher teaching effectiveness. The largest difference among the groups was in the subscale ‘interpersonal relationships and communi-

cation'; consensus and trust were formed between the practice teachers and students through one-on-one teaching by the preceptor, and a desirable communication capability was directly observed.

The intervention groups showed higher clinical practice capability and teaching effectiveness, which implies that partial utilization of preceptorship positively affects practice improvement. The intervention groups displayed higher clinical practice capability and teaching effectiveness than the control group. This effect increased with the duration of teaching by a preceptor. Therefore, we propose that gradual introduction of preceptorships to the curriculum for junior nursing students at a four-year nursing college can help students achieve on-site practice educational goals. In addition, policy to enhance clinical practice teaching through association with a nursing college and a hospital should be established.

Nursing implications

The findings indicate that a collaborative clinical practicum including preceptorship can help to increase clinical practice ability and teaching effectiveness among junior nursing students. Further, the number of preceptorship hours for junior undergraduate students in an adult nursing practicum should be increased. Longitudinal studies with larger samples should be conducted in the future to generalize these findings and to better understand the effect of such a practicum in other settings.

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