

THE NURSING PERFORMANCE OF PRECEPTED AND NON-PRECEPTED BACCALAUREATE NURSING STUDENTS

Olive Yonge and Lorraine Trojan

In the 1960s professors who taught nursing began experimenting with preceptorship as a method of teaching clinical nursing skills. Until that time students were taught in small groups of eight to 12, usually during the day shift, in a health care facility within driving distance of the educational institution. Using a preceptorship method, one student (preceptee) is placed with one experienced nurse (preceptor), works any shift, and theoretically may undergo preceptorship in any health care facility in Canada. Students who have undergone preceptorship have cited many advantages: the teaching is individualized; there is more feedback, independence, self-confidence, and support; other health care staff are more accepting of the student, and it is less stressful. The disadvantages are that there are no post-conferences, students work 12-hour shifts, and the preceptor may have insufficient knowledge in physiology and anatomy.

At the University of Alberta, preceptorship was introduced in 1985 to the third year baccalaureate nursing students who are required to take a compulsory six-week spring session course entitled "Nursing 464 - Nursing of Clients with Health Deviations." It is an intense course, offering students the chance to care for "individuals and/or groups with complex behavioural" and "organic deviations." Students are advised not to take other courses concurrently. The major thrust of the course is for the nursing student to consolidate clinical nursing skills and to integrate theoretical and practical knowledge.

Prior to 1985, students completed Nursing 464 in Edmonton and were taught in small groups of eight by a Faculty of Nursing professor. With the introduction of preceptorship, students requested placements in small rural hospitals in Alberta, in speciality areas (e.g, emergency, neonatal intensive care), and in the Yukon and Northwest Territories. Since this course was a six-week block scheduled for completion at the end of the third year, the students quickly took

Olive Yonge, R.N., is Associate Professor at the University of Alberta, and Lorraine Trojan, B.Sc., M.N., is a community health nurse with Health and Welfare Canada in Edmonton, Alberta.

advantage of a unique opportunity and requested placements that, until then, had been unavailable to them.

Research questions

Clearly, the preceptorship method of teaching provides students in Nursing 464 with an opportunity to learn skills in various clinical settings, but is the nursing performance of such students different than if they had been taught in small groups? Do the students acquire satisfactory nursing skills regardless of the method of instruction? Since faculty members may arrange a preceptorship hundreds of miles away from the university, they may never see the preceptor and have no method of directly assessing the student's performance. Therefore, this study was designed to obtain information about the validity of the preceptorship experience. The specific research question was: What is the difference between the nursing performance of preceptored and non-preceptored baccalaureate nursing students as noted by students themselves, the preceptors and professors?

Literature Review

There have been seven publications describing the effect of preceptorship on baccalaureate nursing students (Bashoff, 1988; Clayton, Broome, & Ellis, 1989; Dobbs, 1988; Infante, Forbes, Houldin, & Naylor, 1989; Itano, Warren, & Ishida, 1987; Myrick & Awrey, 1988; Scheetz, 1989). Clayton et al. (1989) and Scheetz (1989) both reported positive effects of preceptorship. Clayton et al. (1989) assessed preceptored and non-preceptored baccalaureate students using Schwirian's Six Dimension Scale of Nursing Performance and found that at a six-month follow-up, the preceptored group scored significantly higher on four of the six subscales: leadership, teaching/collaboration, interpersonal relations and communications, and planning and evaluation. Scheetz (1989) compared the clinical competence of baccalaureate students who underwent preceptorship and those working as nursing assistants during a summer work program, and found that the preceptored students showed significantly greater clinical competence.

In two studies, Corwin's Nursing Role Conception Scale was used to examine the effects of preceptorship on baccalaureate students. Dobbs (1988) found that students felt less role deprivation after their preceptorship experience. Itano et al. (1987) found no difference between students who had experienced preceptorship and those who experienced a traditional program. Since the two studies looked at role conception at different times in the student's program, it is difficult to compare the two, and they do not necessarily contradict each other. Another study completed by Myrick and Awrey (1988) compared seven preceptored and five non-preceptored fourth-year nursing students using the Six

Dimensional Scale of Nursing Performance (6-D Scale) and Slater Nursing Competencies Rating Scale. They found that the preceptored students had a more positive view of their performance and the non-preceptored students engaged in more planning and evaluative behaviours as rated by their teachers.

If sufficient research on preceptorship demonstrates that it is as or more effective than traditional instruction, this will have implications for curriculum design and financial management. If the entire Nursing 464 course was preceptored, the cost of the course would be halved since only half of the current quota of professors would be needed to coordinate the preceptorship experiences. At the University of Alberta this would be an approximate saving of \$25,000 per year. Advantages of conducting this study at the University of Alberta include the availability of a large sample size and the opportunity to repeat this study in successive years.

Method

The study design was quasi-experimental, using a non-preceptored group and preceptored group. Random assignment was not possible because the students had already selected their clinical agency, and depending on their selection, underwent preceptorship or traditional training. As a means of comparing the two groups the students were asked to fill out a brief demographic section indicating age, gender, whether they had a rural or urban placement, and estimated grade point average in the third year. Of the 74-member class, 71 consented to participate: 38 students were preceptored and 33 received non-preceptored teaching. The study involved three professors and 33 preceptors.

Definition of Terms

Preceptor: A registered nurse who is an expert practitioner and is willing to teach a baccalaureate nursing student in the clinical area for a three- or six-week period.

Preceptee: A third-year nursing student who registered in Nursing 464 and chose to be taught by a registered nurse rather than a professor.

Instrument

The Six Dimensional Scale of Nursing Performance (6-D Scale), is composed of 52 items grouped into six performance subscales: leadership (five items); critical care (seven items); teaching/collaboration (11 items); planning/evaluations (seven items); interpersonal relations and communications (12 items); and professional development (10 items) (Schwirian, 1978). The 52 items were the end result of extensive pilot testing and factor analysis. Internal consistency reliability scores, using coefficient alpha, range from 0.84

for the leadership/employer subscale to 0.98 for the professional development/self subscale (Ibid). Content validity was addressed by obtaining consensus among the instrument developers, consultants, and pilot respondents as to what were positive nursing behaviours. Concurrent and predictive validity were tested. That is, nurses were asked to appraise their own performance, and their supervisors evaluated them and also predicted who would be the "high performers." It was previously shown that nurses who scored highest on all [*sic*] subscales also were rated as the most promising by their employers. Permission to use this instrument was obtained.

Procedure

Data were collected on the first day of clinical practice (pre-clinical) and on the last day (post-clinical), when students were asked to rate their performance on the 6-D Scale. The instructors and preceptors were asked to rate the students using the 6-D Scale during the last clinical week. Accordingly, the following non-preceptored students received questionnaires: eight students in psychiatry (six-week placement), eight in pediatrics (three-week placement), and 17 in surgery (three-week placement). The preceptored students who received questionnaires included: eight in psychiatry (three-week placement), seven in medicine (three-week placement), four in obstetrics (three-week placement), and 19 in hospitals or clinics outside of Edmonton (six of which were six-week placements). The professors and preceptors also received questionnaires at the end of the placements.

All data pertaining to preceptorship were collected through the mail and subjects were provided with stamped, addressed envelopes to increase the response rate; data from the non-preceptored groups were collected in person. Although the course was six weeks in length, the students were able to choose two three-week sections in two different sites. To control for bias and equalize the two groups of students, testing was conducted in the first three weeks or over the full six weeks. Bias would have occurred because some students changed clinical areas or type of teaching (preceptored or non-preceptored) after the first three weeks.

Setting

All non-preceptored training sites were in large, acute care teaching hospitals in Edmonton, Alberta. Preceptorship sites were in the same institutions as the traditional training sites as well as in rural Alberta, the Yukon, and the Northwest Territories. There were a total of 19 non-preceptored students and three preceptored students in Edmonton, compared with six preceptored students outside of Edmonton.

Results

In the preceptored group a complete set of data was obtained for only nine students (9/38) in comparison with 19 students (19/33) in the non-preceptored group. The mean age of the students who returned their questionnaires was 22.6 years for the preceptored group and 23.78 years for the non-preceptored group. There was one male in the non-preceptored group.

The means and the standard deviations for the six criteria are categorized by preceptored and non-preceptored groups. Pre-clinical, post-clinical, and professors'/preceptors' evaluations are presented in Table 1. The preceptored group had pre-clinical mean values for leadership, teaching, planning, and professionalism that were higher than in the non-preceptored group. The non-preceptored group had higher pre-clinical means for critical care and interpersonal relationships and higher post-clinical means for all the factors except professionalism. The professors' evaluation of their non-preceptored group was lower than the students' for all criteria except leadership. The preceptors' evaluation of students was higher than the professors' for all factors except leadership. The preceptors rated their students higher than the students rated themselves on all factors except professionalism.

Table 1

Means and Standard Deviations of Nursing Performance of Preceptored and Non-preceptored Nursing Students as Measured by the Six Dimensional Scale of Nursing Performance

Non-preceptored Group (n = 19)

Variable	Pre-clinical		Post-clinical		Professors	
	mean	SD ¹	mean	SD	mean	SD
Leadership	2.48	0.55	2.96	0.54	3.07	0.52
Critical Care	2.32	0.47	3.04	0.53	2.81	0.55
Teaching	2.28	0.37	2.88	0.64	2.79	0.56
Planning	2.70	0.37	3.19	0.51	3.11	0.44
Interpersonal Relations	3.02	0.43	3.33	0.46	3.14	0.48
Professional Development	3.18	0.37	3.47	0.38	3.31	0.45

¹SD: Standard Deviation

Table 1 (continued)**Preceptored Group (n = 9)**

	Pre-clinical		Post-clinical		Preceptors	
	mean	SD ¹	mean	SD	mean	SD
Leadership	2.55	0.61	2.68	0.84	3.02	0.42
Critical Care	2.26	0.63	2.62	0.37	3.10	0.51
Teaching	2.30	0.29	2.68	0.34	2.97	0.42
Planning	2.72	0.53	3.08	0.49	3.22	0.39
Interpersonal Relations	2.92	0.60	3.18	0.37	3.29	0.50
Professional Development	3.42	0.35	3.57	0.30	3.42	0.29

¹ SD: Standard Deviation

Homogeneity of variance tests, Cochran, and Bartlett-box tests were done to detect if the within-group variances of the non-preceptored and preceptored groups were significantly different from one another. The results were nonsignificant. These homogeneity of variance tests were also performed on the pre-clinical and post-clinical subgroups. Results indicated that the within-group variances were not significantly different except for the factor: "teaching." When the same tests were performed on the pre-clinical, post-clinical, and preceptors' and professors' evaluations of the two groups, heterogeneity of variances appeared for critical care, interpersonal relationships, and professionalism.

To find if the group effect for the non-preceptored and preceptored groups was zero, the first ANOVA for repeated measures was done. The results were nonsignificant, indicating that the non-preceptored and preceptored groups were similar. To test for change over time between the pre-clinical and the post-clinical evaluations of the two groups, ANOVA for repeated measures was performed (Table 2). The results showed that the means for all six criteria were significant, indicating that all factors changed over time.

The third ANOVA for repeated measures was performed on the pre-clinical and post-clinical evaluations of the two groups to see if there was a time and group effect (Table 3). The results were not significant, indicating that there were no interactions between the tests and the groups, although this could be due to the small sample size. An ANOVA for repeated measures was done so a comparison for means between the six criteria in the 6-D scale for the pre-clinical, post-clinical, and the professors' or preceptors' evaluations could be made. The ANOVA is the preferred initial test because it is a more complete, effective test which indicates significant overall differences among the factors while the t-test does not indicate the interpretable levels of significance (Norman & Streiner, 1986).

Table 2

Time-ANOVA to Detect Change Over Time for Repeated Measures (Pre-clinical versus Post-Clinical) Between the Non-preceptored (n = 19) and Preceptored (n = 9) Groups

	Mean Square hypothesis	Mean Square error	DF	F	P
Leadership	1.14	0.11	(1,26)	10.17	0.00*
Critical care	3.56	0.10	(1,26)	34.50	0.00*
Teaching	2.91	0.12	(1,26)	23.93	0.00*
Planning	2.27	0.15	(1,26)	15.38	0.00*
Interpersonal Relations	0.99	0.07	(1,26)	13.97	0.00*
Professional Development	0.59	0.03	(1,26)	20.00	0.00*

DF: degrees of freedom

* $p \leq .05$

Table 3

*Group*Time ANOVA for Repeated Measures to Detect a Time or Group Effect in the Non-preceptored (n = 19) and Preceptored (n = 9) groups*

	Mean Square hypothesis	Mean Square error	DF	F	P
Leadership	0.36	0.11	(1,26)	3.16	0.08
Critical Care	0.42	0.10	(1,26)	4.06	0.05*
Teaching	0.16	0.12	(1,26)	1.31	0.26
Planning	0.05	0.15	(1,26)	0.36	0.55
Interpersonal Relations	0.01	0.07	(1,26)	0.08	0.77
Professional Development	0.07	0.03	(1,26)	2.34	0.13

DF: degrees of freedom

* $p \leq .05$

Table 4 indicates that there are significant differences among the pre-clinical, post-clinical, and professors' means for leadership, teaching, and planning in the non-preceptored group. Table 5 shows that in the preceptored group a significant difference between the means of the three scores was found only for teaching. The professor and preceptor evaluations of the students, and students' self-evaluation were completed at the end of the clinical practice. The Scheffe tests for multiple comparisons revealed the following significant differences in the non-preceptored group: in leadership, between pre-clinical and post-clinical, and between pre-clinical and professors' evaluations; in teaching between pre-clinical and post-clinical, and between pre-clinical and professors' evaluations; and in planning between pre-clinical and post-clinical, and between professors' and pre-clinical evaluations. In the preceptored group, the only significant difference was for teaching between the pre-clinical and preceptors' scores. In the non-preceptored group, interpersonal relations and professionalism, and two factors in the preceptored group, planning and professionalism, have differences approaching statistical significance.

Table 4

A Comparison of Pre-clinical, Post-clinical, and Professors' Scores of Non-preceptored Nursing Students (n = 19) Using ANOVA

	Mean Square hypothesis	Mean Square error	DF	F	P
Leadership	1.86	0.26	(2,36)	7.08	0.00*
Teaching	2.02	0.23	(2,36)	8.61	0.00*
Planning	1.33	0.22	(2,36)	6.12	0.00*
Interperson Relations	0.45	0.18	(2,36)	2.5	0.09
Professional Development	0.41	0.15	(2,36)	2.68	0.08

DF: degrees of freedom
* p ≤ .05

Table 5

A Comparison of Pre-clinical, Post-clinical, and Preceptors' Scores of Preceptored Nursing Students (n = 9) Using ANOVA

	Mean Square hypothesis	Mean Square error	DF	F	P
Leadership	0.50	0.25	(2,16)	2.00	0.16
Teaching	1.01	0.15	(2,16)	6.56	0.00*
Planning	0.60	0.21	(2,16)	2.91	0.08
Interpersonal Relations	0.32	0.27	(2,16)	1.18	0.33
Professional Development	0.06	0.02	(2,16)	2.63	0.10

DF: degrees of freedom

* $p \leq .05$

Table 6

T-test for Non-preceptored and Preceptored Groups, Comparing Pre-clinical and Post-clinical Evaluations

	Non-preceptored (n = 19)		Preceptored (n = 9)	
	pre-clinical to post-clinical		pre-clinical to post-clinical	
	t	p	t	p
Leadership	- 4.41	0.00*	- 0.84	- 0.42
Critical Care	—	—	—	—
Teaching	- 4.64	0.00*	- 4.25	0.00*
Planning	- 3.80	0.00*	- 2.30	0.05*
Interpersonal Relations	- 4.20	0.00*	- 1.63	0.14
Professional Development	- 4.84	0.00*	- 2.39	0.04*

* $p \leq .05$

Pearson correlations were examined, and no significant correlations were found between age or grade point average and the six test criteria.

In the non-preceptored group there were significant mean differences between pre-clinical and post-clinical scores for five of the six factors in this study (Table 6). (Critical care was omitted from the comparison because the students in psychiatry did not provide nursing care in that area). In contrast, the preceptored group had only two factors, teaching and professionalism, with a significant difference between pre-clinical and post-clinical scores. In the preceptored group there was a significant difference between pre- and post-clinical scores for critical care, teaching, planning, interpersonal relations, and professionalism.

Table 7 indicates that the pre-clinical and post-clinical t-test values are nonsignificant for the preceptors' and professors' evaluations. However, in the study by Myrick and Awrey (1988) planning was significant at the 0.05 level, and interpersonal relations at the 0.10 level.

Table 7

T-test Values Comparing Pre-clinical, Post-clinical, Professors' and Preceptors' Evaluations

	Pre-clinical		Post-clinical		Evaluations	
	Non-preceptored-preceptored		Non-preceptored-preceptored		Instructors/preceptors	
	t	p	t	p	t	p
Leadership	- 0.29	0.77	1.05	0.31	0.33	0.75
Critical Care	0.26	0.79	2.17	0.04	1.18	0.25
Teaching	- 0.18	0.86	0.89	0.38	- 0.83	0.41
Planning	- 0.09	0.93	0.55	0.59	- 0.64	0.53
Interpersonal Relations	0.51	0.61	0.84	0.41	0.72	0.48
Professional Development	- 1.66	0.11	- 0.65	0.52	- 0.66	0.52

An ANOVA tested for any difference between the two locations of Edmonton and outside Edmonton (Table 8). Because of the small sample size, the two groups were not separated. As indicated in Table 9, there was a significant difference in professionalism between the two locations.

Table 8

Mean Values for Nursing Performance as a Function of Location

	Edmonton		Outside of Edmonton	
	pre-clinical (n = 22)	post-clinical (n = 22)	pre-clinical (n = 6)	post-clinical (n = 6)
Leadership	2.46	2.90	2.65	2.72
Teaching	2.24	2.82	2.42	2.77
Planning	2.65	3.12	2.89	3.29
Interpersonal Relations	2.94	3.27	3.13	3.31
Professional Development	3.18	3.46	3.55	3.65

Table 9

ANOVA for Pre-clinical Evaluations as a Function of Location

(Compares Edmonton (n = 22) and Outside Edmonton (n = 6))

	Mean Square hypothesis	Mean Square error	DF	F	P
Leadership	0.01	0.52	(1,26)	0.02	0.88
Teaching	0.00	0.28	(1,26)	0.00	0.94
Planning	0.29	0.30	(1,26)	0.95	0.33
Interpersonal Relations	0.17	0.26	(1,26)	0.64	0.43
Professional Development	1.48	0.21	(1,26)	7.18	0.01*

DF: degrees of freedom
*p ≤ .05

Discussion

The students were evaluated by themselves, their professors, and their preceptors on the six criteria of leadership, critical care, teaching, planning, interpersonal relationships, and professionalism. The preceptored students rated themselves higher than did the non-preceptored students on the pre-clinical evaluation in the areas of teaching, planning, leadership, and professionalism, but on the post-clinical evaluation only on professionalism. Ironically, the preceptors rated the preceptored group higher than the non-preceptored group on all criteria except professionalism. With the exception of the professionalism criterion, the preceptors' ratings of the preceptored students were higher than students' evaluations and more favorable than the professors' ratings of the non-preceptored students. The preceptors were therefore not unduly hard on their students. The finding that professors rate student's performance lower than do preceptors has implications for the validity of student evaluations.

In terms of length of the rotation, significant differences were found when the Scheffe test for multiple comparisons was used. In the non-preceptored group, significant differences were found between pre-clinical and post-clinical, and between pre-clinical and professors' evaluations in the areas of leadership, teaching, and planning. In the preceptored group a significant difference between the pre-clinical and preceptors' scores was found only in teaching. Over time, a non-preceptored experience might have more impact on developing the student's nursing abilities or conversely, preceptorship might be most effective when limited to a time period not exceeding three weeks. When the Scheffe test was applied, significant differences were obtained in the non-preceptored group in the areas of leadership, teaching, planning, and interpersonal relationships; leadership and teaching were significant in the area of psychiatric nursing. These results suggest nursing performance is based on the adequacy of the clinical area and that a student's perception of a clinical area is influenced more when not in a preceptorship program. Perhaps students in a clinical group are taught to focus on leadership and teaching, as was the case for psychiatry, or by virtue of being in a group, they encourage each other to engage in these nursing actions.

The post-clinical results in this study do not corroborate those of Myrick and Awrey (1988). In the current study, the non-preceptored group had significantly higher scores for all factors except critical care, and the preceptored group had only two significantly higher factors: teaching and professionalism. Myrick and Awrey found that there were significantly higher scores for professionalism in the non-preceptored group and all factors except leadership in the preceptored group. This difference could be partly explained by the fact that the present study used third year baccalaureate nursing students, and included 19 non-preceptored subjects and more than one professor. Myrick and Awrey's study used fourth year students, and included only five non-preceptored subjects. The effect of clinical site and length of time in the clinical area could also have affected

nursing performance. Given these differences, our finding that the non-preceptored group performed better than the preceptored group must be interpreted with caution.

Limitations

This study is limited by the small sample size and a bias for students or professors/preceptors to give socially desirable responses on the instrument. Since students were not randomly assigned to type of teaching experience, variables other than preceptorship may have affected nursing performance. Also, evaluation of each preceptored student required three mailings (pre-clinical, post-clinical, and preceptor), and often only two of the three were received for a given participant. The number of preceptored students was thereby reduced from 33 to nine.

Another limitation of the current study is that preceptors volunteered rather than being preselected. This meant there was no control for educational background or previous experience with preceptorship. There was also no standardized orientation for the preceptors; some of the faculty members responsible for preceptors gave on-site, one-to-one orientations while others telephoned preceptors who lived in rural areas.

This study design had other problems. The preceptors did not have a comparison group against which to measure clinical performance; this introduced a bias. As well, the instrument was designed for practicing nurses rather than student nurses, so a caveat was placed at the top of the instrument: "Please note: This instrument was designed for registered nurses and so there may be items you will not be able to fill out." In reviewing the instrument for appropriateness of administration to student nurses, it was felt the items were general enough to be relevant to both groups of nurses (e.g.: seek assistance when necessary, develop a plan of nursing care for a patient, or give emotional support to family of dying patient).

Since the results of the present study do not corroborate those of Myrick and Awrey (1988), the authors are cautious about drawing any conclusions regarding the differences between preceptored and non-preceptored students. The differences observed may be due more to the professors and preceptors than the students. More research with a larger sample size is needed to assess nursing performance and other variables such as actual clinical site, length of program, year of student's program, first versus second preceptorship experience, and impact of theoretical knowledge (physiology) on performance.

Conclusion

The research question asked was, "What is the difference between the nursing performance of preceptorship and non-preceptored baccalaureate nursing students as rated by themselves and preceptors or professors?" The difference, regardless of statistical application, was that the non-preceptored group had significantly higher post-clinical scores on more factors than did the preceptored group. Further research in this area is warranted with more replication, a larger sample size, management of random assignment, and control for extraneous variables.

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RÉSUMÉ

Les résultats des étudiants en sciences infirmières qui préparent un bac en suivant une formation individuelle ou en groupe

Cette étude compare l'efficacité de deux méthodes d'enseignement différentes, à savoir une formation individuelle ou en groupe. Ces méthodes ont pour but d'apporter les connaissances cliniques aux étudiants en sciences infirmières de troisième année de baccalauréat dans un cours obligatoire de six semaines à la session de printemps. Une échelle de six niveaux de performance en sciences infirmières a été utilisée pour l'auto-évaluation des étudiants, de même que pour l'évaluation des étudiants par les professeurs en formation individuelle ou en groupe. Cette étude est semblable à une étude antérieure appelée Canclain et qui a été faite par Myrick and Awrey (1988), mais les résultats sont radicalement différents. À la fin du cours clinique, les étudiants qui ont reçu une formation en groupe (19) avaient des évaluations bien plus positives quant aux facteurs d'animation, d'enseignement, de planification, de relations interpersonnelles et de professionnalisme comparativement aux évaluations pré-cliniques. Selon Myrick and Awrey (1988), seul le facteur de professionnalisme était nettement plus élevé dans cette comparaison. En ce qui concerne le groupe en formation individuelle (9), seuls l'enseignement et le professionnalisme étaient considérés comme bien plus positifs après six semaines d'expérience clinique. Cette étude était limitée à cause de la petite taille de l'échantillon, du manque d'attributions aléatoires et de l'influence des préjugés. Une recherche supplémentaire serait justifiée.