

The Effects of Portfolio Method on Self-directed Learning (SDL) of Nursing Students

Malahat Nikravan Mofrad^{1*} and Maryam Karami²

Shahid Beheshti University of Medical Sciences, Tehran, Iran.

DOI: <http://dx.doi.org/10.13005/bbra/1201>

(Received: 10 October 2013; accepted: 22 November 2013)

The teacher-centered learning methods provide fewer opportunities compared to student-centered methods. This study aims to determine the impact of the portfolio method on self-directed learning. This semi-empirical study conducted on 48 nursing students in medical-surgical ward. The sample was selected using census sampling method and classified into intervention and control groups. Data were collected using self-directed learning (SDL). Statistical analysis was performed using t-test, ANOVA, Kruskal-Wallis test, Chi-square and Pearson correlation coefficient with the help of SPSS-18. The intra-group comparison and total scores indicated the conventional teaching and portfolio methods increased the scores of self-control and self-management in both intervention and control groups. The intergroup comparison showed the same outcomes. So no statistically significant differences were observed. The total scores of self-directed learning showed the conventional teaching and portfolio methods will increase nursing students' self-directed learning ($P=0.001$ and $P=0.003$ for intervention and control groups, respectively). However, self-directed learning in intervention group showed a significant increase compared to the control group ($P=0.006$). It can be inferred that the conventional method has been able to strengthen self-direction in nursing students in the field internship and the homework assignments in the form of a portfolio will increase its impact on self-direction.

Key words: Portfolio, Self-Directed Learning, Field Internship.

Due to increased production of knowledge, information and technology, the medical knowledge is very short-lived. To overcome this situation, students should become lifelong learners, instead of transferring a set of information and knowledge to them. Due to the necessity of lifelong learning, self-directed learning theory is increasingly arising as a requirement in medical education. The medical students enter a field with professional training courses in which updated knowledge, skills and self-direction is necessary to succeed in this

arena¹. According to the self-direct learning theory, students are encouraged to assess their knowledge deficits and act to resolve the defects. To reach this goal, they might make use of their knowledge, available resources or informed judgment to select appropriate solutions². Nursing education, like most medical disciplines involves both theoretical and practical processes. The clinical training is the most important and integral part of nursing education. In terms of importance, it is considered as the heart of professional education³.

The field internship is a part of clinical nursing education to create the proper opportunities to gain proficiency in the application of nursing knowledge in the field to promote the initiative and independency power of learners observing the principles of community-based education as well as preserving the security of patients and

* To whom all correspondence should be addressed.
Tel.: +98(912)2497906; Fax: +98-2188202520
E-mail: m.nikravan@sbmu.ac.ir

their families⁴. Training competent graduates, as the objective of nursing education is of great importance. Thus, to ensure the achievement of this goal, it is necessary to receive feedback on the training of learners, graduates and recipients of health care in the community. Medical educators use several methods and tools to evaluate the level of student skills as an essential part of the clinical training⁵. Portfolio along with functional tests resulted in a small revolution in the definition and implementation of this evaluation⁶. Portfolio is defined as “a bag for keeping documents and work samples” in Oxford Dictionary⁷. This vocabulary is derived from an Italian expiration “portarefogliou”⁸. It was utilized in educational arena from 1980th in order to evaluate the learner performance⁸. Portfolio is a tool for collecting learning documents that presents picture of individual and professional development⁹. Accordingly, this can be used in order to offer learning, previous experiences and proof of eligibility for entrancing to new course of study or new job. To tell the truths, it is not a simple tool for collecting learning data and documents. Now it develops like as useful tool to reinforce general and specific skills such as critical thinking and reflection¹⁰, apply theoretical knowledge to practical¹¹, and knowledge development¹². In general, a portfolio is a set of evidence, usually in written form, of learning products and processes. The portfolio shows achievements and personal and professional developments through a critical analysis of the content¹³.

Since the nursing students enter the fields with professional education courses, updated knowledge, skills and self-direction are necessary for the success in this arena. Medical educators need appropriate tools for assessment of the self-directed abilities of students to adjust learning resources and teaching methods to develop the SDL ability of students¹⁴. The teacher-centered learning methods provide fewer opportunities for nursing students’ personal experiences compared to student-centered methods¹⁵. Therefore, the present study aims to determine the impact of the portfolio method on self-directed learning of nursing students in ShahidBeheshti University of Medical Sciences.

MATERIALS AND METHODS

The population consisted of all nursing students in semester 8 who passed medical-surgical internship course in the first and second semesters of 2012-2013 in the hospitals affiliated to ShahidBeheshti University of Medical Sciences. The sample size was 48 selected by census method. The subjects passed the theoretical courses of internal-surgery and had not unallowable absence during the internship course. The data were collected using Fisher questionnaire and portfolio evaluation checklist. The content validity of the tool was confirmed with amendment comments of 10 members of the faculty.

The questionnaire included demographic information and self-direction scale (with three sub-scales of willingness to learn, self-control and self-management). This scale is a self-assessment tool consisted of 40 items which has been developed and validated for the first time by Fisher and his colleagues¹⁶. The subject responded to a 5-degree scale with a very high⁵ to a very low¹ score. Portfolio evaluation checklist was developed by Davis *et al*. The checklist includes 6 criteria, each criterion with a minimum score of 1 and a maximum score of 4. The criteria include the portfolio content, discussion on portfolio, patient management, the ability to use theoretical information at bedside, use of educational resources and academic behavior (learning from patients). The Cronbach’s alpha was used to calculate the reliability of the two tools. The reliability for Fisher questionnaire and portfolio evaluation checklist was calculated equal to 0.86 and 0.83, respectively.

First, students were divided into intervention and control groups. The number of subjects in each group was 24 students. The students were provided with the questionnaires on the first day of internship and immediately after completion of the course. After collecting the questionnaires, students were provided with the self-directed learning scale of the homework assignments folder (portfolio). The portfolio consisted of goals, how to complete the portfolio, homework assignments and delivery date. Two days before the end of the internship, the portfolios were collected and evaluated using the portfolio evaluation checklist.

RESULTS

The intra-group comparison of three domains of self-directed learning questionnaire and total scores indicated that the conventional teaching and portfolio methods increased the scores of self-control (P=0.001 and P=0.002 for the intervention and control groups, respectively) and self-management (P=0.001 and P=0.003 for the intervention and control groups, respectively) in both intervention and control groups. The intergroup comparison showed that same improvements in both the intervention and control groups. In this regard, no statistically significant differences were

observed between the two groups (P=0.091 and P = 0.299 for self-control and self-management, respectively). The intragroup comparison showed that the score of willingness to learn increased after training in the intervention group (P=0.017). However, no significant difference was observed before and after training in the control group (P=0.215). The total scores of self-directed learning of students in both control and intervention showed that the conventional teaching and portfolio methods will increase nursing students' self-directed learning (P=0.001 and P=0.003 for intervention and control groups, respectively). However, the difference between the intervention

Table 1. Description and comparison of background variables in intervention and control groups

		Intervention group	Control group	P
		(n=24)	(n=24)	
		Mean (Standard Deviation)		
Age		22.21(1.38)	22.71 (0.86)	0.140
6 Semester GPA		15.6 (1.10)	16.27 (1.17)	0.053
Gender	Number (%)			
	Female	12 (50)	15 (62.5)	0.383
	Male	12 (50)	9 (37.5)	
Interest in nursing	High	9 (37.5)	10 (41.7)	0.946
	Moderate	9 (37.5)	8(33.3)	
	Low	6(25)	6(25)	
A history of student work	Yes	10 (41.7)	10 (41.7)	1
	No	14 (58.3)	14 (58.3)	

Table 2. Description and comparison of mean difference of self-directed learning scores of students in each group before and after intervention (intra-group difference)

Group		Intervention(n=24)	Control(n=24)
Response and time		Mean (standard deviation)	Mean (standard deviation)
Total score	Before intervention	70.26 (11.88)	72.92 (12.07)
	After intervention	83.53 (8.02)	78.40 (8.84)
(95% CI)P (paired t-test)	<0.001 (8.78-17.75)	0.003 (2.07-8.89)	
Willingness to learn	Before intervention	76.94 (13.75)	74.10 (15.12)
	After intervention	84.03 (9.32)	77.08 (14.12)
(95% CI)P (paired t-test)	0.017 (1.39-12.78)	0.25 (-1.86-7.84)	
Self-control	Before intervention	73.81 (12.32)	74.82 (11.36)
	After intervention	84.58 (8.24)	80.66 (6.87)
(95% CI)	P (paired t-test)	<0.001 (5.96-15.59)	0.002 (2.39-9.28)
Self-management	Before intervention	70.83 (14.93)	69.51 (14.23)
	After intervention	81.81 (10.27)	77.08 (10.54)
(95% CI)	P (paired t-test)	<0.001 (6.17-15.78)	0.003 (2.91-12.23)

and control groups was significant, so that self-directed learning in intervention group showed a significant increase compared to the control group ($P=0.006$).

DISCUSSION

Preliminary statistical results showed that the mean age of students in both groups was between 22 to 23 years. Therefore, no statistically significant correlation was found between the two groups. Smedley *et al.* (2007) observed no statistically significant correlation between the mean level of clinical skills and nursing students' learning and age. However, Nadi and Sajjadian (2011) found that the older students have higher self-direction than younger students. The mean GPA of six last semesters of students in control and intervention groups was 15.6 and 16.27, respectively. The difference between the two groups was not statistically significant. These results showed a significant correlation between readiness for self-directed learning, the total score, GPA and the score of basic sciences exam. Smedley (2007) found a significant correlation between the GPA of past semesters and the mean clinical skill in the intensive care unit (0.009). In other words, students with higher GPA had higher skill levels in the intensive care unit. Yassini *et al.* (2003) found a significant correlation between the mean scores of pre-internship test, basic sciences comprehensive exam and the mean score of clinical examination quality, so that the increase in test scores resulted in higher scores of physical examination. The few samples probably led to inconsistent results with above studies¹⁷.

The effect of interest in nursing on self-directed learning was also investigated. The results indicated that upon completion of the internship in the control group, the mean score of the willingness to learn was significantly increased. The students with a passion for nursing have more self-direction in terms of willingness to learn. In the intervention group, at the end of the internship, self-directed learning showed a significant improvement in all three areas in terms of interest in nursing. The results of the present study are consistent with the results of BeigMoradi and Nazeri (2004) who found that students with more interest in nursing have higher clinical skills¹⁸.

The total score of the students' self-directed learning in the intervention and control groups were compared (intergroup comparison). The training times of conventional training and portfolio methods will increase nursing students' self-directed learning in both groups. However, the interaction between group and time showed a significant difference between the intervention and control groups ($P= 0.006$). In other words, self-directed learning using a portfolio in the intervention group showed a significant increase compared to the control group. The use of portfolios in the field internship could be more effective on self-direction of students. According to Tiwari and Tung (2003), the students who used portfolio method in their clinical training, believed that the use of this method as a method for clinical training and evaluation improved their clinical learning¹⁹. Karimi *et al.* (2010) found that portfolio approach improved learning through increasing students' participation in the learning process and assisting them in the application of theoretical principles and concepts of clinical education. Kumar *et al.* (Graduate Education and Research Center, 2008) showed that students' learning significantly enhanced using the portfolio method compared to conventional methods²⁰. The results of Namdarpour (2008) also confirmed that there is a significant correlation between self-directed learning and academic skills of students²¹. Valizadeh *et al.*, (2011) indicated that portfolio is a suitable method in order to enhance cognitive learning for nursing student during clinical settings. The results of Bahreini's survey showed a positive impact on reflective thinking skills of nurses by use of portfolio²². Heidari stated that this tool can enhance learning rate by increasing the student participation in clinical training²³.

CONCLUSION

In general, the results of the present study demonstrated the effectiveness of the conventional teaching method in the field internships. The results showed that conventional methods could be able to strengthen the self-direction of students in field internship. Since self-direction is one of the fundamental goals of field internship, these results confirm the effectiveness of this type of internship. Furthermore, the findings indicated

that the homework assignment in the form of a portfolio will increase its impact on self-direction. Therefore, it is recommended that the portfolio method would be used for homework assignment in field internship.

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