The Effect of Portfolio on Nursing Students' Learning and Satisfaction from Clinical Evaluation

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Abstract

Background: Portfolio is a measurement tool that can document student learning, performance, and achievement of key objectives. In this study, the effect of the portfolio on nursing students' learning and satisfaction in the field training course was assessed.

Methods: This quasi-experimental study was conducted among 60 nursing students using census sampling and randomized into the control and intervention group. The performance and satisfaction of the two groups has been tested with researcher-designed questionnaires. Construct validity was used to validate the satisfaction questionnaire. Nursing student's knowledge and clinical competency were measured at the end of the intervention. The data were analyzed using descriptive and analytical statistics through SPSS-22.

Results: The mean (SD) of field training score in the case and control group was 18.23 (1.03) and 17.08 (1.05), respectively (P=0.000). Mean (SD) of student satisfaction from evaluation method was 55.07 (6.28) in cases versus 37.43 (11.20) in controls (P=0.000). The mean score of knowledge, application and analysis level questions in the portfolio group was significantly greater than the control group (P=0.033, P=0.000, respectively). No significant difference was seen in two group clinical competencies. The factor structure of the satisfaction survey scale was confirmed using exploratory factor analysis (P<0.000), which produced three factors (Justice, Regularity and organization and Continuity and feedback in the evaluation) and explained 83.8% of the total variance.

Conclusion: Use of portfolio method increases nursing student's competence and their participation in the learning process by increasing the level of students' satisfaction from the evaluation method.

Keywords: PORTFOLIO, EDUCATION, NURSING STUDENT, SATISFACTION, EVALUATION

Introduction

Considering the important and effective role of nurses in providing healthcare services and emphasis on this group's training, a systematic, scientific, and professional structure is necessary, especially in the university courses of this group (1).

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Nursing education planners claim that the most important part of nursing education is clinical education (2). They believe this kind of training provides an opportunity for the student to turn theoretical knowledge into mental and motor skills that are essential for patient care. In fact, essential skills and professionalism depend on the quantity and quality of education in clinical settings (3).

Field training is a part of the nursing education program that aims to create appropriate opportunities for increasing nursing skills and

appropriate knowledge application and clinical reasoning (2, 3). The uncertain summative evaluation process is one of the field training problems (4). Assessment is considered as a valuable tool for improving performance and appraising it. Portfolios as one of the more outstanding tools can be used to collect, document and assess evidence of the learners' progression in tasks or competencies, enable the learner to gain insights into performance (5). However, the findings of some studies report moderate and poor clinical competence in nursing students in Iran (1). From the students' viewpoints, unclear job description and clinical education objectives are the most fundamental problems of clinical education (6).

Although student evaluation is one of the important topics in clinical nursing education, the uncertain summative evaluation process is another student-related clinical problem (7). Therefore, clinical performance evaluation always involves challenges such as inequality of the evaluation process, lack of objective evaluation, and instability in applied tools (8). As a result, the necessity of having valid, reliable and objective tools is one of the issues that have always been emphasized in studies related to the clinical evaluation of nursing students.

However, many conventional clinical evaluation methods are not able to measure students in clinical settings and evaluate limited information. This is while gaining competencies in necessary capabilities related to dealing with patients, diseases, and their management are crucial (9). Studies about the evaluation of clinical education showed that portfolio-based learning or "portfolio" is useful in learning and assessing nursing students in clinical settings. In the last 10 to 15 years, the portfolio method has been introduced as a way of creating competency in all continuing medical education fields (10). The portfolio is defined as a measurement tool in medical education that can be used to survey performance in a valid field or as a collection of evidence that illustrates educational and practical findings during a specific time (11). Like any other method, the portfolio has advantages and disadvantages. One of the advantages of this method is that in addition to providing accurate examples of educational and learning outcomes, the portfolio improves both individual and professional progress through practical feedback and clinical analysis (12, 13). Also, the nature and the structure of the portfolio constantly involves the students, thus, students are encouraged to receive continuous feedback and are constantly updating their knowledge during learning (12, 14). The evaluation portfolio collects the acquired skills and shows the details of the tasks performed by the student, which should be assessed by the instructor. This type of portfolio is used to assess the level of student skills development (15). Studies showed that portfolios show nursing students' abilities in critical thinking, performing standard nursing care, communicating with others and linking the theory to practice on the patient's bedside (16). From the students' viewpoint, being time-consuming and stressful and needing the trainer's description to complete the portfolio are some of the limitations of portfolios.

This method will help the student to better identify effective environmental factors in the learning process (17, 18). Several studies have shown that this method improves learning (19). While, in new educational books, the lack of sufficient research on its effectiveness and validity in evaluating students is one of the weak points of this method (20).

In the new curriculum of undergraduate nursing students, field training is implemented using the internship method. In the current internship process, students are completely isolated from the training process and undergo a conventional process in wards and this matter is dangerous and problematic for education and previous learning stabilization. Using the portfolio under the supervision of faculty members can affect the process of learning and stabilize scientific preparation.

Despite proper and valid documentation about the use of portfolios in evaluating nursing students, for various reasons such as ignorance, lack of consensus on the benefits of using this method, and inadequate study on the effectiveness of

this method, it has not been systematically implemented and structured in Iran (21). Therefore, we aimed to assess the effect portfolios on nursing students' learning and satisfaction in the management field training course in Dezful University of Medical Sciences.

Methods

The present quasi-experimental study was conducted in the faculty of nursing of Dezful University of Medical Sciences, Khuzestan province, Iran during 2018.

The statistical population consisted of all eighth-semester undergraduate nursing students in two consecutive semesters passing the management field training course. All of the eighth-semester nursing students were selected with census sampling and randomly allocated to portfolio and conventional evaluation group (Figure 1). The inclusion criteria for case and control groups were being an eighth-semester nursing student and a management field trainee. The researcher explained the purpose and method of the study on the first day of training and written informed consent was obtained from all participants. We explained the assignments that are conventionally done in the form of logbook and duties expected

by the head nurses in oral and written form for the control group. Also, the objectives of clinical education and the conventional evaluation method (Nursing School Evaluation Form) were explained by the instructor who answered the student's questions. The instructor periodically visited the wards and monitored the process of completing the logbook by students and solved student's probable problems. After two weeks and at the end of the management field training course, students were evaluated through their logbook and their score was determined. Also, they completed students' satisfaction questionnaire on clinical evaluation by logbook. The log book contained educational goals and clinical skills –in form of check list- that must be obtained. Evaluating of the students was done by traditional checklists of general and clinical competencies. Portfolio method and its completion was explained accurately for the case group and all students were asked to perform and document all nursing and management activities specified in the portfolio and deliver them to the instructor in written form according to the specified plan form. After receiving feedback, they should make corrections and re-deliver it to the instructor. The students' evaluation was completed according to the portfolio evaluation checklist and their score was determined. They completed a satisfaction questionnaire on clinical evaluation by portfolio. To survey the effect of using the portfolio method compared with the logbook on the students learning rate, a written exam with four questions was taken at the end of the management field training course by both groups. The questions were based on their passed course, expected duties and the situations they encountered in the apprenticeship. The first question was about knowledge evaluation, the second was in the application and analysis level and the two other questions were related to clinical reasoning and judgment. Content validity of the questions was done by nursing faculty members and ward head nurses.
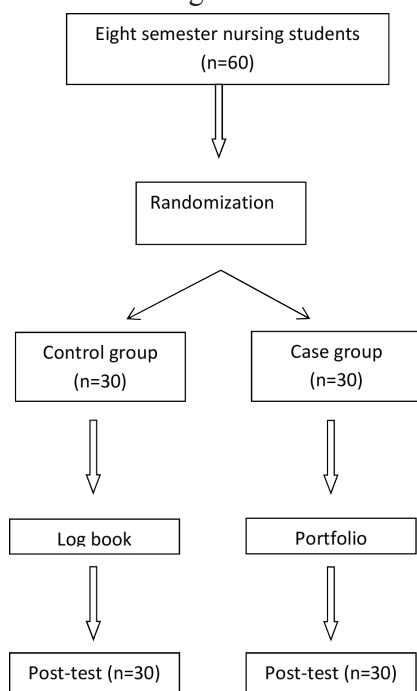

Figure 1: Randomization and follow up of the study

Information Gathering Tools
Demographic and educational profile

questionnaire: This questionnaire includes demographic information (age, sex, current location, employment status), and academic profile (total average, nursing management theory course score which is the prerequisite for this trainee).

Satisfaction questionnaire on clinical evaluation by portfolio and logbook: It is a researcher-designed questionnaire. Its content validity was approved with Delphi method by university professors of Dezful, Shahid Beheshti and Urmia Universities of Medical Sciences. The questionnaire has 13 items and each participant responds to the items on a five-point Likert scale with a total score of 65. Scores of 13–25 show poor satisfaction, 26-51 moderate satisfaction and 52-65 good satisfaction. Reliability of the questionnaire was evaluated using Cronbach's alpha coefficient.

Management field training course portfolio evaluation checklist: It is a researcher-designed questionnaire. It's validity and reliability were determined through content validation and Kuder-Richardson test (KR Coefficient=0.81), respectively. This checklist has six criteria. First criteria: ward evaluation with five evaluation criteria and a maximum of eight scores. Second criteria: decision-making form completion with five evaluation criteria and a maximum of eight scores. Third criteria: education to staff with four evaluation criteria and a maximum of four scores. Fourth criteria: the patient or his/her family education with four evaluation criteria and a maximum of four scores. Fifth criteria: preparation of nursing practice problems checklist with three evaluation criteria and a maximum of six scores and sixth criteria is calculating staff needs with three evaluation criteria and a maximum of six scores. The portfolio contains several sections as students' home work that must be delivered until dead time. These sections include: 1- Health, Nursing care and Equipment assessment check list. 2- Effectiveness check list of clinical nursing care (supervisor check list). 3- Personnel education. 4- Auditing form of most usable procedure of wards. 5- Systematic calculation of human resources form.

5- Problem solving form of ward. 6- Monthly shift programming of personnel form. Student had to do these homework daily and delivered to instructor individually and took feedback.

Sample size: All the 60 nursing students studying in eighth-semester in two consecutive semesters were enrolled in the study through census sampling. They were randomly divided into control and case groups.

Inclusion criteria: The inclusion criteria for case and control groups were being eighth-semester nursing students and a management apprentice and willingness to participate in the study.

Statistical analysis: SPSS software, version 22 (SPSS Inc., Chicago, IL, USA) was used for data analysis using descriptive methods (frequency distribution tables, Mean and SD) and analytical analysis methods (parametric independent and paired sample t test and Chi-square test). Exploratory factor analysis with varimax rotation was used to determine the construct validity of each section of the questionnaire to group related items according to common themes or factors, eliminate redundant items and identify those items that were related to more than one factor. Eigen values were also considered in the selection of items.

Results

In this study, 60 management field training course eighth-semester nursing students were enrolled. Thirty students participated in the case and 30 students in the control group. The two groups had almost the same characteristics in the background (age, nursing management theory course score and total average) variables. The mean (SD) age of the case and control groups were 23.8 (2.42) and 24.2 (2.21), respectively (P=0.508). The mean (SD) nursing management theory course score was 17.43 (0.77) in the case group and 17.08 (0.87) in the control group (P=0.1). The mean (SD) score of management field training course was 17.08 (1.05) in the controls and 18.23 (1.03) in the cases (P=0.000). Table 1 shows the distribution of management field training course scores separated by student evaluation method.

Table 1: Distribution of management field training course scores separated by the student evaluation method

Management field training course score	Evaluation method		Total
	Logbook N (%)	Portfolio N (%)	N (%)
<17	20 (66.7)	6 (20)	26 (43.3)
17-20	10 (33.3)	24 (80)	34 (56.7)

Table 2: Distribution of student satisfaction about evaluation method

	Weak satisfaction N (%)	Moderate satisfaction N (%)	Good satisfaction N (%)
Portfolio	-	4 (13.3)	26 (86.7)
Logbook	7 (23.3)	20 (66.7)	3 (10)

Table 3: Factor loading for students 'satisfaction from the evaluation method

Factor name	Questions	Factors		
		Factor 1	Factor 2	Factor 3
Justice in evaluation	1	0.667		
	2	0.794		
	3	0.746		
	13	0.904		
	9	0.713		
Regularity and organization in evaluation	4		0.614	
	11		0.573	
	8		0.397	
	6		0.911	
	5		0.117	
Continuity and feedback in evaluation	10			0.741
	12			0.766
	7			0.202

The mean (SD) student satisfaction from the evaluation method was 55.07 (6.28) in the case group and 37.43 (11.20). There was a significant statistical difference between the two groups and the case group was more satisfied from the evaluation method (P=0.000, table 2). We conducted an exploratory factor analysis (EFA) with principal component analysis using maximum likelihood with varimax rotation to see if the observed variables of the satisfaction questionnaire on clinical evaluation by portfolio and logbook loaded together and were adequately correlated. Since the satisfaction questionnaire was researcher-developed scale, the acceptable validity and reliability assessment seemed necessary as well as inescapable. So the most important type of construct validity was assessed by Exploratory Factor Analysis (EFA). The Reliability of the questionnaire was evaluated using Cronbach's alpha coefficient. The factor analysis of questionnaire items produced three factors which explained 83.8% of the total variance. All factors were labeled after exploration of the items. The first factor was correlated to questions that measure "justice in evaluation", and the largest factor load related to the 13th question with a factor loading of 0.904. The second factor was correlated to questions that measure "regularity and organization in evaluation", and the largest factor load was related to the sixth question with a factor loading of 0.911 and the third factor was correlated to the questions that measure "continuity and feedback in evaluation", and the largest factor load related to the 12th question with a factor loading of 0.766. The proposed names of the factors with the questions related to that factor and their factor

load are given in Table 3.

In written questions, there was a significant statistical difference between the two groups' knowledge level (P=0.033) and a significant statistical difference was observed in the students' application and analysis level (P=0.000). No significant statistical differences were observed in the student's clinical reasoning and judgment (P=0.356).

Discussion

Portfolio learning is one of a variety of active learning strategies that are unique, pivotal and focused on learning objectives and enhance background learning (22).

The purpose of this study was to determine the effect of portfolios on nursing students' learning and satisfaction from clinical evaluation. Comparison of changes in the case and control group has shown significant differences in the levels of nurses' satisfaction about using portfolio and the case group had more satisfaction from evaluation method (P=0.000). Our findings are consistent with those of Assadi and colleagues who also found that the students are more satisfied in some aspects of the portfolio method than the conventional method showing the advantages of this new method (23). Kariman and co-workers also found similar results (24). Ahmady and co-workers confirmed that total satisfaction of electronic portfolio evaluation was more than the conventional evaluation (25). Another study comparing the effect of clinical evaluation with both portfolio and conventional method on nursing students' satisfaction showed that the satisfaction of the portfolio group was higher than the conventional method (26). One of the reasons for the dissatisfaction of this method is that completing paper portfolios can be cumbersome due to its high volume (25). In this study, satisfaction was greater in the dimensions of "justice in evaluation", "regularity and organization in the evaluation" and "continuity and feedback in the evaluation". Latifi found that students satisfaction from the portfolio was higher "in matching the issues in the method and form of evaluation with the

goals of clinical practice", "Creating an interest and motivation for student participation in the learning activity and motivation to use books and other resources" (26).

The differences in management field training course score in the case and the control group were significant. These results indicate that application of portfolios has a more positive impact on clinical competence than the conventional methods and is consistent with other research performed in this area worldwide. For example, one study showed that the average competence score in the experimental group increased significantly after the intervention, (P<0.001) but in the control group these changes were not significant (P=0.08). They also concluded that the professional portfolio was an effective tool to improve nurse's competencies and helped nurses update their knowledge, skills, and competence for taking full responsibility as nurses (27). The results of another study showed that completion of portfolio strengthen the critical approach in nurses' performance and enhances ongoing professional development (28). One of the major effects of the portfolio is that it reflects nurses' performance and helps them review their past performance and analyze and correct it (29).

In our study, in addition to the significant impact of the portfolio on overall clinical competence of nurses, significant changes have also been observed in the nursing student's knowledge, application and analysis levels and no significant difference in clinical reasoning and judgment levels was seen. Another study confirmed that portfolio has a significant impact on nurse's competence in seven categories such as improvement of clinical competence in the categories of quality assurance, managing situations, and organizational roles (27). Promoting critical thinking, developing a sense of responsibility, improving confidence and clinical decision making and identifying learning and skills requirements were included in Timmins and Dunne study (16). In another study, scores of application, analysis and cognitive levels were significantly higher in the portfolio group, but they did not differ significantly with respect

to knowledge and comprehension levels (24). One of the limitations of this study was that it was conducted in a research environment in a particular part of the country. Repeating this study in different research environments will identify other weaknesses and strengths of the portfolio. It is recommended in future studies to assess the impact of the educational portfolio on all levels of nursing students. It is also recommended that the use of the electronic portfolio be evaluated.

Conclusion

A significant increase in the students' satisfaction from the evaluation method and their increased clinical competence score after using the portfolio method implied the effectiveness of this training method in enhancing the clinical competencies and satisfaction of nursing students. Moreover, the portfolio method increased the amount and extent of learning by increasing student participation in the learning process and providing opportunities for student feedback and independent learning. So, we can use this method as a useful method in training and appraising clinical competence.

Acknowledgments

Conflict of Interest: None declared.

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