

## Effectiveness of standardized patient on patient education skills of nursing students — a pilot study

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### Abstract

**Objective:** To determine the effectiveness of simulation method in nursing education.

**Method:** The experimental study was conducted from February 2013 to January 2014 at the Nursing Faculty of Ege University, Izmir, Turkey, and comprised second-year students. The subjects were randomly assigned to experimental or control groups. The experimental group participated in a simulation laboratory that involved the use of a standardized patient. Data was collected and analysed using SPSS 20.

**Results:** Of the 66 subjects, with a mean age of  $20 \pm 1.05$  years, 62(93.9%) were females and 4(6.1%) were males. There were 32(48.5%) subjects in the experimental group and 34(51.5%) in the control group. There was no statistically significant difference between the groups in the mean scores obtained on the pretest, posttest ( and retention test ( $p > 0.05$  each). However, experimental group had higher mean retention test scores ( $1.90 \pm 1.96$ ).

**Conclusion:** The knowledge levels of both groups increased, but lack of significant difference between the scores shows that both methods are successful.

**Keywords:** Nursing education, Patient education, Standardised patient. (JPMA 69: 1848; 2019)

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### Introduction

Recently, the concept of safe care has gained importance and attention from society as well as from health workers.<sup>1</sup> It must be borne in mind that better and more instructive education regarding patient safety is the most effective solution for reducing the costs incurred from human error, for eliminating the current shortage of staff skilled in patient care, and for resolving the issues involving ethical concepts and the negative aspects of safe care.<sup>2</sup>

Nursing educators suffer from a lack of control over many variables in the clinical setting. As a result, not every student can be offered the same learning opportunities, which leads to difficulties in achieving the desired level of competence for nurses.<sup>3,4</sup>

In theory-based education, nursing students are provided the opportunity to practise their skills in a laboratory environment before applying them on patients. Certain factors, such as the short amount of time patients spend in hospital, the large number of students, the presence of high-risk patients, pressure on nurses, and the increase in the prevalence of home care, have resulted in some groups of students graduating without ever having gained experience in dealing with frequently-encountered conditions of illnesses. This not only gives rise to differences between graduating students, but also

makes it difficult for the students to acquire sufficient experience that corresponds to their basic educational adequacy.<sup>1,5-7</sup>

Studies carried out on medical and nursing education with focus on patient safety and the shortcomings of skills seen in students in clinics have brought attention to the use of simulation-based education, which can be applied in laboratories or classroom environments to teach professional skills.<sup>8</sup>

In order to compare learners in terms of opportunities that are missed in the clinical environment, simulation, an effective teaching method, can be used to help develop clinical judgment and to increase self-confidence. As part of the learning process, learners are provided the opportunity to integrate self-monitoring, practice-related information, knowledge of clinical structure, and structural focus.<sup>9</sup>

The use of simulation methods in present-day nursing education to ensure safer care and enable students to be better prepared for their clinical practice has been spreading, resulting in educational environments that are more active, despite the steadily increasing numbers of nursing students and the inadequacy of educational facilities.<sup>10</sup>

The current study was planned to determine the effectiveness of the simulation method and the use of a standardised patient (SP) in facilitating the ability of nursing students to gain patient education skills.

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## Subjects and Methods

The experimental study was conducted from February 2013 to January 2014 at the Nursing Faculty of Ege University, Izmir, Turkey, and comprised second-year students who were enrolled using simple random sampling. After approval from the institutional review committee, the sample size was calculated using G\* Power 3.0 software based on 0.8 power estimation, 0.05 alpha error rate, and 0.80 wide effect size. The subjects had knowledge of basic educational skills, but had never managed a patient before. The patient education process included a theoretical course followed by laboratory practice. The ability of the students to administer patient education was evaluated in clinical practice.

After taking consent from the subjects, a lecture entitled 'Patient Education Process' was presented to all the participants. They were then divided into three-member groups for laboratory practice, where each group was tasked with planning a patient education process. After the laboratory practice, the groups were randomly assigned to either the experimental group or the control group, and a post-test was carried out on the control group. The experimental group students participated in a simulation laboratory that involved the use of SP. Before the intervention, the SP, who had furnished informed consent, was trained on possible questions and answers relating to the scenario were prepared by the researchers. The same scenario was presented to all the groups, and the students were asked to gather data and plan for a patient education process based on adult resuscitation model and the SP. Video recordings were made of the SP intervention sessions. At the end of the simulation practice, randomly-selected videos were watched by all the students in the experimental group, and the patient education process performed was reviewed as part of the 15-20-minute discussion session. At the debriefing session, the things which needed to be done relating to patient education were reviewed, and any mistakes that had been made were corrected via discussion and the correct actions that should have been taken were reinforced. Following the SP intervention, the experimental group took a post-test and completed the Simulation Method Evaluation Form (SMEF) to share their views on the simulation method. A retention test was given to all the participants 20 days later. For the clinical practice stage, all participants who went to the clinics were expected to plan and apply patient education on a patient to whom they had given care in the hospital. The patient education performance was assessed by faculty members not involved in the study, by patients, and by the students themselves.

Data was collected using Identifying Information Form (IIF), Knowledge Test (KT), SMEF, Patient Identifying Information Form (PIIF), and the Patient Education Evaluation Form (PEEF).

The IIF was developed by the researchers and included questions on the students' age, gender and education. KT, which included 24 multiple-choice questions (MCQs), was prepared by the researchers based on the relevant literature<sup>1,5,10</sup> to measure the students' levels of knowledge on the patient education process. This test was used for the pre-test, post-test and retention test, where higher scores indicated higher levels of knowledge. To confirm the validity and reliability of the test, expert opinions were taken. Pearson correlation analysis was performed according to the results of the pilot test (n:30), and a weak significant correlation (r:0.38; p:0.907) was found. T-test analysis was conducted to test the invariance of the measurement instrument against time, and no statistically significant difference was found (t: 0.118, p:0.907).

SMEF was prepared in accordance with the relevant literature<sup>2,6,7</sup> to collect views on the simulation method. The form was organised as a 3-point Likert-type scale (1=I do not agree' 2=I am undecided; 3=I agree) with 20 items, where higher scores on each item indicated higher degree of agreement with the simulation method. To confirm the validity and reliability of the test, expert opinions were taken. Spearman correlation analysis was performed according to the data obtained from the pilot test (r:0.450, p:0.009), and a weak, positive, statistically significant correlation was found. The test of difference between the means of this form was performed with Wilcoxon analysis (W:1.400, p:0.161), which showed there to be no statistically significant difference. In other words, the comprehensibility of SMEF did not change over time, and a positive correlation was found. Cronbach's alpha value of the first application was 60.8, while that of the second application was 75.9.

The PIIF was completed by the patients who had taken part in the patient education during clinical practice. This form was created to gather socio-demographic data of the patients, including their age, gender, medical diagnosis and marital status. The PEEF, developed through a review of the relevant literature,<sup>11</sup> was used to evaluate the patient education prepared and implemented by the students. The form included criteria relating to behaviour before, during and after the training. The patient education prepared and presented by the students was evaluated with this form by the faculty, the students and the patients during clinical practice.

Differences between the demographic data of the groups were determined by applying chi-square and Kruskal-Wallis analysis. Mann-Whitney U and Wilcoxon tests were used to determine differences among the pre-test, post-test, and retention test results. Differences between the patient education evaluation and patient education scores were assessed using Mann-Whitney U test.

For the patient education portion of the research, certain patients in the clinic were selected as subjects on which the student nurse would perform the nursing process. These patients were aged 18-65 years, had no difficulty communicating, and were willing to participate. Data was used for research purposes only, and the identities of the patients were kept confidential.

## Results

Of the 66 subjects, with a mean age of  $20 \pm 1.05$  years, 62(93.9%) were females and 4(6.1%) were males. There were 32(48.5%) subjects in the experimental group and

34(51.5%) in the control group. There were 31(97%) females in the experimental group and 31(91%) in the control group. In terms of demographics, the groups were homogeneous except for age ( $p=0.032$ ) and gender ( $p=0.013$ ).

No statistically significant difference was found between the pre-test ( $p>0.05$ ), post-test ( $p>0.05$ ) and retention test ( $p>0.05$ ) scores of the groups. After the simulation application, a significant increase was seen in the post-test scores of the experimental group compared to their pre-test scores ( $p<0.05$ ). After the laboratory application, the post-test scores of the control group also rose compared to their pre-test scores ( $p<0.05$ ). A significant difference was found between the post-test and retention test scores of both groups ( $p<0.05$ ).

No statistically significant differences were found between the post-test and pre-test gain scores ( $p=0.836$ ), the retention test and pre-test gain scores ( $p=0.353$ ), and

Table-1: Comparison of experimental and control groups' pretest, posttest, and retention test scores / gain scores.

	Group	n	Mean $\pm$ SD	Median-IQR	U	p value
Pretest	Experimental	32	15.63 $\pm$ 0.41	16-2	506.000	0.62
	Control	34	16 $\pm$ 0.32	16-2		
Posttest	Experimental	32	17.88 $\pm$ 0.40	17.50-3	501.000	0.57
	Control	34	18.24 $\pm$ 0.48	19-4		
Retention Test	Experimental	32	19.78 $\pm$ 0.31	20-3	477.500	0.38
	Control	34	19.41 $\pm$ 0.28	19-3		
Pretest - Posttest Gain Scores	Experimental	32	2.25 $\pm$ 2.40	2.50-3.00	528.000	0.83
	Control	34	2.23 $\pm$ 3.09	3.00-3.50		
Pretest -Retention Test Gain Scores	Experimental	32	4.15 $\pm$ 2.96	3.50-4.00	472.500	0.35
	Control	34	3.41 $\pm$ 1.95	3.50-1.25		
Post Test -Retention Test Gain Scores	Experimental	32	1.90 $\pm$ 1.96	2.00-2.75	439.000	0.17
	Control	34	1.17 $\pm$ 2.77	0.50-4.00		

\* $p<0.05$

SD: Standard deviation

IQR: Interquartile range

U: Mann-Whitney U.

Table-2: Comparison of experimental and control groups' patient education evaluation forms and patient education scores.

	Group	n	Mean $\pm$ SD	Median- IQR	U	pvalue
Patient Evaluation	Experimental	32	93.98 $\pm$ 1.21	97.50-10	487.5	0.46
	Control	34	92.72 $\pm$ 1.21	93.75-10		
Faculty Evaluation	Experimental	32	89.22 $\pm$ 1.24	90-12.50	491.0	0.49
	Control	34	88.01 $\pm$ 1.26	87.50-10		
Student Evaluation	Experimental	32	91.80 $\pm$ 1.88	93.75-12.50	534.0	0.89
	Control	34	92.65 $\pm$ 1.22	95-8.75		

\* $p<0.05$

SD: Standard deviation

IQR: Interquartile range

U: Mann-Whitney U.

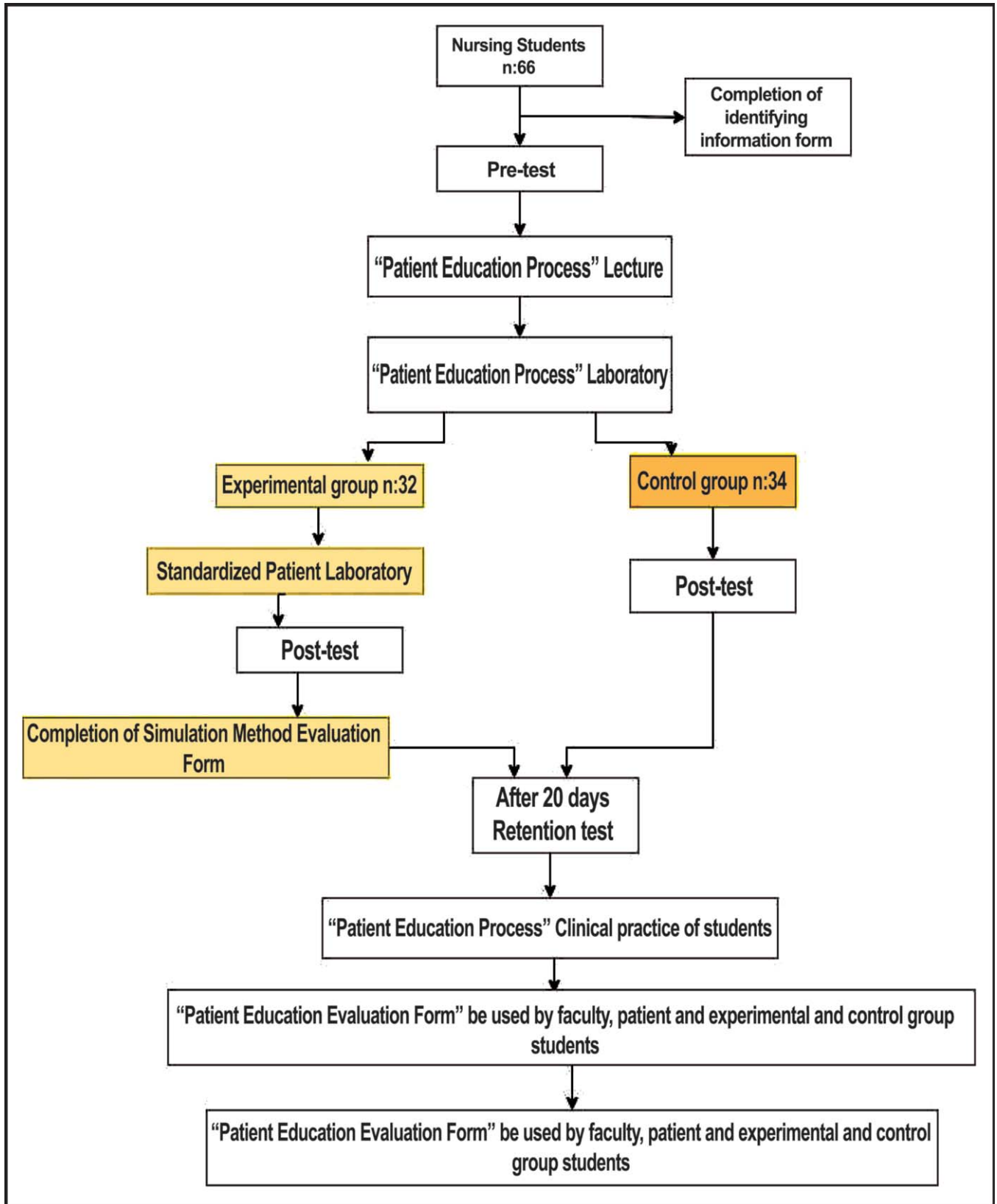


Figure: Study design.

Table-3: Distribution of experimental group students by simulation method evaluation form.

Simulation Method Evaluation Form	I disagree		I am undecided		I agree	
	n	%	n	%	n	%
1. During the simulation I had the opportunity to work with my peers	2	6.3	-	-	30	93.8
2. I was able to enter into the scenario	-	-	7	21.9	25	78.1
3. I learned with the help of this enjoyable method	1	3.1	10	31.3	21	65.6
4. The instructor's direction contributed to my learning	2	6.3	7	21.9	23	71.9
5. The method provided me with enough knowledge and material to solve the problems in the case	1	3.1	12	37.5	19	59.4
6. I think the method did not help me to learn	21	65.6	2	6.3	9	28.1
7. The use of this method before entering the clinical environment increased my self-confidence	-	-	10	31.3	22	68.8
8. I think my classmates were better able to learn with this method	1	3.1	5	15.6	26	81.3
9. I think this method could also be used in other lessons	2	6.3	9	28.1	21	65.6
10. I learn only better by lecture method	26	81.3	3	9.4	3	9.4
11. I would have learned better in a laboratory application without the use of simulation	20	12.5	8	25	4	62.5
12. I'll learn better with teaching methods supported by simulation	1	3.1	5	15.6	26	81.3
13. The scenario was incomprehensible	14	43.8	12	37.5	6	18.8
14. The standardized patient approach gave me confidence	3	9.4	11	31.3	18	59.4
15. In the feedback sessions, I got useful feedback from the video recordings	1	3.1	9	28.1	22	68.8
16. In the feedback sessions, the feedback given by the instructors strengthened my learning	5	15.6	5	15.6	22	68.8
17. Watching myself on the video recording enriched my learning	1	3.1	6	18.8	25	78.1
18. The simulation method advanced my communication skills	1	3.1	6	18.8	25	78.1
19. The simulation method advanced my holistic assessment skills	1	3.1	5	15.6	26	81.3
20. The simulation method advanced my critical thinking skills	2	6.3	4	12.5	26	81.3

the post-test and retention test gain scores ( $p=0.174$ ) in either group (Table-1).

No statistically significant difference was found between the scores of the two groups on the patient education evaluation form, the faculty evaluation form, and the student evaluation form ( $p>0.05$  each) (Table-2).

The mean SMEF of the experimental group was  $52.87\pm 1.00$  (Table-3).

## Discussion

The current study examined whether or not there was a statistically significant difference between the experimental and control groups in terms of their knowledge levels and the patient education they administered when an SP was used for the former group. According to a study, the knowledge and skill performance of the experimental group were significantly higher than those of the control group in post-test results.<sup>12</sup> In another study, no significant difference was found between the post-test knowledge scores of the experimental and control groups, and this lack of difference was attributed to the fact that the education on perioperative and postoperative care provided in the skills laboratory increased the students' skill levels.<sup>13</sup> Although the results obtained from the current study are in partial agreement with literature cited above, the patient education laboratory practice given to both groups is thought to have been adequate in developing

students' patient education skills, and for this reason, the post-test median score of the control group was, contrary to expectations, higher than that of the experimental group.

While the post-test median scores indicated that the patient education laboratory was adequate for increasing students' knowledge and skills, the median scores of the retention test were low in the control group and high in the experimental group. It can thus be argued that the simulation method was responsible for the knowledge and skills remaining in the students' memories for longer and helping them achieve retention in learning. Moreover, it is expected that learning in groups with the help of an SP would give students an easier opportunity to gain these patient education skills.

Although no significant difference was found between the retention test gain score of the experimental group (2.00-2.75) and that of the control group (0.50-4.00), it was nonetheless observed that the gain scores of the experimental group were higher (Table-1). This shows that the simulation method had an effect on the experimental group.

In contrast to the current findings, a study found that the retention test scores were somewhat lower than the post-test scores.<sup>14</sup> However, another study reported that didactic knowledge learned by simulation was retained longer than the knowledge learned by other methods.<sup>15</sup>

One study found that students who were taught using the explanation method forgot what they had learned more quickly, and that those who had learned by the simulation method remembered the information longer.<sup>3</sup> Other studies in the literature support these findings.<sup>1,7,10,12</sup>

While the retention test scores of the experimental group increased relative to their post-test scores, it was observed that the retention test scores of the control group were lower than their post-test scores. The levels of knowledge of patient care of the experimental group increased over time, but those of the control group fell slightly, but nonetheless to a statistically significant extent. The greater increase in the scores of the experimental group suggests that their knowledge was more permanent than that of the control group. It should also be noted that both the groups had clinical practice and were able to refresh their knowledge of patient education between the administration of the post-test and the retention test, two factors that made a positive contribution to their retention test scores (Table-1).

As seen in similar studies, both statistically significant and insignificant results in the knowledge levels of experimental and control groups can be found.<sup>16-26</sup> In other words, the lack of significant gains in knowledge from the pre-test to the post-test points to the need of focusing on the knowledge application stage in the measurement of knowledge acquisition and synthesis output when practising nursing interventions through simulation scenarios.<sup>16,19</sup>

Evaluation of the patient education administered in the study by the experimental and control groups on the basis of the scores given by the patients, the faculty, and the students themselves during clinical practice showed there was no statistically significant difference between the two groups. Although there was no significant difference in the overall median scores of the two groups, the median scores obtained by the experimental group from the patients and the faculty were higher than those of the control group. This finding supports the view that teaching with simulation is more permanent and effective than lecturing and facilitates a more instructive patient education (Table-2).

A study using PEEF evaluated patient education performed by students and found that the highest scores obtained were those given, in descending order, from patients, students and faculty, and that patients were satisfied with the education that they received.<sup>11</sup> In the light of these findings and those from the present study, it is safe to say that patients are generally satisfied with patient education.<sup>27,28</sup>

The mean SMEF scores of the experimental group were examined. On this form, higher scores indicate that the students' degree of agreement with the simulation method are higher. Based on this understanding, the fact that the students' mean scores on SMEF were high means they liked this method.

The limitation of the current study was the fact that it was conducted with volunteers who took patient education courses in a single nursing facility. Because of simple random sampling, the study results cannot be generalised to any other group. Therefore, randomised trials with larger samples are recommended.

### Conclusion

The knowledge levels of both groups increased, but lack of significant difference between the scores shows that both methods are successful. However, the effectiveness of the simulation method was found to be effective on the level of permanent knowledge.

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