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COMPARING TWO TYPES OF DEBRIEFING "ORAL DISCUSSION FEEDBACK" AND "VIDEO-ASSISTED ORAL DISCUSSION" IN SIMULATION-BASED EDUCATION ON LEARNING OUTCOMES IN NURSING STUDENTS

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A R T I C L E   I N F O

A B S T R A C T

*Background_* Nowadays health care systems are extremely dynamic. Using traditional educating methods in response of rapid changes in the health system are challenging. Thus, we aimed to compare the effect of debriefing methods in simulation-based education by using active teaching strategies in order to evaluate their effects on few educating outcomes in nursing students.

*Method_* The present study is a randomized quasi-experimental study with a control group. Study specimens were nursing students in their 6th semester, from the faculty of nursing and midwifery of Tabriz University of medical sciences. The students of this class were randomly allocated to two groups of 28 "debriefing by oral discussion" and "debriefing by video-assist oral discussion". Before beginning the intervention, we completed questionnaires about student's knowledge, satisfaction, self-confidence, self-evaluation and function. After implementing the intervention (two weeks) and providing each groups particular education, students learning outcomes were assessed and analyzed. The Statistical Package for Social Science (SPSS) version 21 was used for the statistical analysis.

*Results_* According to the results obtained from this study, there was no statistical significant differences in comparing two debriefing methods "oral discussion" and "video-assisted oral discussion" in simulation-based education on learning outcomes. Also, in comparing nursing student's grades before and after the intervention, we observed that both methods had significant positive effects on learning outcomes such as knowledge, function, self-confidence and satisfaction.

*Conclusion_* The present study indicated that both debriefing methods had significant positive effects on learning outcomes such as knowledge, function, self-confidence and satisfaction. Thus, it is suggested that one of these two methods be used as an integral part in the simulation-based learning process, in order to provide an opportunity for feedback and rethinking in learning.

Introduction

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Several studies indicate that there is a huge gap between theoretical education and function of nursing students in clinical practice (1, 2). In addition, in few cases, clinical nursing does not have the desired quality. In other words, the current clinical education system does not have the suitable strength for optimizing student's clinical proficiency and causes decrease in student's professional self-confidence in clinical-scientific decision making (3). Many studies demonstrate a partially immense interval between clinical education and classic education in nursing (2, 4). A study in Iran showed that in students and lecturer's opinion, there is no coordination between theoretical education and clinical nursing services (5). An immense interval between theoretical and clinical education was also seen in other countries studies (2, 5). Change and development in education requires studying educational processes and knowledge regarding modern practical methods. This element as a system of training efficient human resources is very important in the nursing education organization (6).

Today, the health care system is very dynamic and using traditional educating methods for responding to rapid changes in the health organization is challenging (7). Learning as one of the outcomes of education is able to create a partially steady change in intellectual courses, emotional functions and/or behavior as a result of experience (8). Education consists of different theories. One of these theories is the Kolb experimental learning theory. Kolb learning occurs in a four stage cycle: Concrete Experience, Reflective Observation, Abstract Conceptualization and Active Experimentation. In the first two stages, the learner performs an act then observes and deliberates the aspects of the act. In the third and fourth stages, the learner establishes a theory and then experiments the theory (9).

One of the methods used in nurse's clinical education is education by simulation based on Kolb experimental learning theory. Simulation is demonstrating or creating an object or a real experience or a situation again and again. Using simulation in nursing is beside knowledge extension and student's proficiency and function. Thus, with practice, students are able to reach to high levels of critical thinking and gain professional skills without disturbance in patient's health and safety (10). Using simulation decreases the time of gaining clinical skills and leads to increase in self-confidence (11). Furthermore, using simulation in nursing education, decreases potential human hazards (12).

Debriefing is an important level occurring after a simulation practice and its main goal is to support learning goals, functional goals, improve critical view and also student's rethinking by organized discussion. This level is a facilitated oral discussion that happens by speech or with the help of an educator by video-assisted discussion (13). Debriefing is an essential step to solidify learning and is a facilitated interactive reflective discussion about a prior series of events (14). One study showed that the quality and rapidity of student's skills is significantly associated to debriefing (13). Therefore, some say that debriefing is the crucial and inseparable component of simulation that must happen immediately after simulation. Debriefing must be a reflective of practice and provide the opportunity for practical rethinking and self-assessment. Debriefing in experimental learning, motivates learner to deliberate on his or her actions (15).

Because most nursing students face difficulties in learning knowledge and practical skills, modern educational systems are forced to use modern teaching methods. Therefore, modern methods are a positive step in resolving students learning difficulties (6). The effect of debriefing on learning outcomes has not been completely expressed in simulation-based learning. In other words, the studies accomplished regarding the efficacy of debriefing after simulation and its effects on nursing student's learning outcomes, have not reached to a unite conclusion (16). Interestingly, few studies have shown distinct effects on students learning functions (17, 18). Reviewing the studies accomplished in Iran indicated that there has not been any study evaluating debriefing and comparing its methods after simulation. Thus, the objective of the present study is comparing the effects of debriefing methods on simulation by using active teaching strategies for improving, facilitating and accelerating learning and also evaluating its effects on nursing student's learning outcomes.

Method

The present study is a randomized quasi-experimental before and after trial with a control group, accomplished in 2015. The required licenses were achieved from the research vise-presidency of the faculty and the study protocol was approved by the ethics committee of Tabriz University of Medical Sciences. The objective of the study and the research methods were explained to individuals and written informed consents were obtained. Participants were nursing students in their 6th semester recruited from the faculty of nursing and midwifery of Tabriz University of Medical Sciences after simple sampling.

Inclusion criteria were student's tendency to participate in the study, not participating in a workshop or trial in the same objective of this study, not having paramedic or associate degree of nursing, not working in the Cardio-Pulmonary Resuscitation (CPR) section, cardio intensive unit and emergency room. At the beginning of the study, students were classified based on sex and last terms grades and then were allocated to two groups of 28 without students and researcher's notification. Afterwards, a pre-test regarding student's knowledge, satisfaction, self-confidence, self-assessment, function based on designed questionnaire was completed. Afterwards, participants completed a unit simulation scenario by the Ambu Megacode Simulation Software for duration of 20 minutes. The scenario used in this study was a patient diagnosed with cardio-ventricular fibrillation. Immediately after the simulation stage, both groups were separately moved to the debriefing level for 15 minutes.

The case group entered the oral discussion debriefing stage and a taped video displayed to participants and the control group entered the oral discussion feedback stage. Then, after two weeks a pro-test was completed for all participants. Simulation execution process was simultaneously implemented in two separate salons for the two groups.

Student's demographic information was recorded. For implementing the pre-test and pro-test, we used the self-assessment tool before and after teaching, which consisted of 10 questions and belonged to the American National League for Nursing. Additionally, for assessing student's knowledge about CPR, we used the American Heart Association ventricular fibrillation (VF) quiz. The VF quiz consisted of 12 multiple choice questions. For assessing participant's function, the "Emergency Response Function Assess Test" was used which belonged to the American National League for Nursing. This test consisted of 11 items assessing participant's action when meeting a patient with cardio-pulmonary arrest and evaluating and recording their actions. Eventually, for assessing student's self-confidence and satisfaction, we used the national league for nurses "Student Satisfaction & Self-Confidence in Learning" tool. This tool is a questionnaire consisting of 13 questions assessing student's satisfaction and self-confidence in simulation-based learning. For assessing validity, after translating, the questionnaire was sent out to 10 academic members of the faculty for two weeks and after checking the tool and confirming language adaptation, their opinions were considered. The questionnaire was given to 20 students for one week for assessing its reliability. The Cronbach's Coefficient Alpha for satisfaction was 0.82, self-confidence 0.81, knowledge 0.86, self-assessment 0.71.

At the end of the intervention, both group's data were collected and coded and then analyzed by the Statistical Package for Social Science (SPSS) version 21 with a 95% confidence interval and P-value less than 0.05 considered statistically significant. Descriptive statistics was used for data analysis (frequency, frequency percent, mean, standard deviation) and for comparing data we used inferential statistics (Chi2, Fisher exact test, independent T-test, paired T-test, Mann-Whitney nonparametric test). Eventually, the effects of two debriefing methods were assessed on student's knowledge, function, satisfaction and self-confidence.

Results

The results obtained from this study indicate that there were statistical significant differences between the two groups for sex, age, grade, marital status, being a domestic or non-domestic, exchange or guest student, not having work experience, not attending CPR workshops and not experiencing CPR (table 1).

Table 1. Demographic characteristics of study groups (intervention and control group)

Variable	Group	Video-assisted oral discussion n (%)	Oral discussion n (%)	p-value*
Sex	Male	12 (%44.4)	13 (%46.4)	0.883
	Female	15 (%55.6)	15 (%53.6)	
Marital status	Single	23 (%88.5)	24 (%85.7)	0.998
	Married	3 (%11.5)	4 (14.3%0	
Guest or exchange student	Yes	3 (%11.1)	4 (%14.8)	0.998
	No	24 (%88.9)	23 (%85.2)	
Residency	Domestic	17 (%65.4)	19 (%67.9)	0.847
	Non-domestic	9 (%34.6)	9 (%32.1)	
Student work experience	Yes	2 (%7.4)	2 (%7.1)	0.998
	No	25 (%92.6)	26 (%92.9)	
attending CPR workshops	Yes	16 (%59.3)	12 (%42.9)	0.224
	No	11 (%40.7)	16 (%57.1)	
experiencing CPR	Yes	12 (%44.4)	13 (%46.4)	0.883
	No	15 (%55.6)	15 (%53.6)	
Age (mean±SD)		22.42 (2.71)	22.10 (1.77)	0.699
Diploma grade (mean±SD)		17.72 (1.96)	17.50 (1.87)	0.687
Mid-term grade (mean±SD)		15.87 (1.25)	16.02 (1.12)	0.647

n: number; SD: standard deviation; CPR: cardio-pulmonary Resuscitation.

*asymmetric variables were analyzed by a two-sided Chi2 test and symmetric variables by Independent-t-Test test.

It must be indicated that in the video-assisted oral discussion group, one person did not want to continue the study and left the study. Thus, 27 students participated in the video-assisted oral discussion group and 28 students were in the oral discussion group.

Results display that there were no statistical significant differences in mean self-assessment, knowledge, satisfaction and self-confidence between the two groups before and after the intervention. According to paired T-test, there were statistically significant differences (significant increase) before and after the intervention for mean self-assessment in the video-assisted oral discussion group (p<0.001) and the oral discussion group (p<0.012), for mean knowledge in the video-assisted oral discussion group (p=0.001) and the oral discussion group (p=0.026), for satisfaction in the video-assisted oral discussion group (p<0.001) and the oral discussion group (p=0.021), for self-confidence in the video-assisted oral discussion group (p<0.001) and the oral discussion group (p<0.001).

Table 2 shows mean variable changes for knowledge, satisfaction, self-confidence and self-assessment between study groups. As can be seen, there were no statistical significant differences for any of the variables.

Table 2. Mean variable changes for knowledge, satisfaction, self-confidence and self-assessment between study groups

Change	video-assisted oral discussion group (n=27)		oral discussion group (n=28)		P-value*
	mean	SD	mean	SD	
Knowledge	0.77	1.50	0.53	1.20	0.511
Satisfaction	2.85	3.12	1.61	3.47	0.172
Self-confidence	4.04	3.99	2.62	3.75	0.180
Self-assessment	12.12	12.59	10.92	11.44	0.712

*Paired T-test

Table 3 presents the mean function of two groups before and after the intervention. As can be seen, there were no statistical significant differences for any of the variables before and after the intervention. However, change differences were statistically significant. These changes were positive in the video-assisted oral group. In other words, the function score increased after the intervention. In the oral discussion group, these changes were negative. Unlike the other group, function score decreased after the intervention.

According to table 3, the duration for diagnosing heart rhythm after education decreased in both groups and diagnosing time change was higher in the video-assisted oral group in comparison to the oral discussion group. However, these changes were not statistically significant. The duration of performing heart massage, electric shock, giving oxygen after education decreased in both groups. Changes in duration of function were higher in in the video-assisted oral group in comparison to the oral discussion group. However, these changes were not statistically significant.

Table 3. Mean function of study groups before and after the intervention.

variable		video-assisted oral discussion group (n=27)		oral discussion group (n=27)		P-value*
		mean	SD	Mean	SD	
Function quality	Before	6.63	1.16	7.05	0.77	0.361
	After	7.33	0.62	6.92	0.85	0.075
	Change	0.69	1.24	-0.12	1.11	**0.037**
	p-value[a]	**0.007**		0.792		
Diagnosing heart rhythm (s)	Before	21.70	11.33	11.09	26.85	0.094
	After	6.59	3.36	11.92	5.83	**<0.001**
	Change	15.11	10.99	14.92	12.17	0.954
	p-value[b]	**<0.001**		**<0.001**		
Giving heart massage (s)	Before	32.86	16.44	27.01	18.25	0.218
	After	15.58	8.82	13.16	5.81	0.233
	Change	17.27	17.38	13.85	17.55	0.471
	p-value[b]	**<0.001**		**<0.001**		
Giving electric shock (s)	Before	55.65	61.91	41.32	34.91	0.299
	After	17.51	11.35	19.10	12.48	0.624
	Change	38.13	63.04	22.21	31.90	0.247
	p-value[b]	**0.001**		**0.004**		
Giving oxygen (s)	Before	11.88	64.59	94.69	47.66	0.294
	After	18.85	8.81	18.99	8.64	0.953
	Change	92.02	65.87	75.69	47.28	0.294
	p-value[b]	**<0.001**		**<0.001**		

S: second, SD: standard deviation.

* Independent T-test   [a]Wilxicon test   [b]Paired T-test

Discussion

According to the results obtained from this study, there were no statistical significant differences in comparing to two methods of debriefing "oral discussion feedback" and "video-assisted oral discussion" in simulation-based learning on learning outcomes. Comparing the before and after scores indicated that both methods had significant positive effects on knowledge, function, self-confidence and student's satisfaction. The general findings of the present study specify that debriefing has a positive effect on simulation-based learning; however, several studies are crucial for evaluating different methods on this phenomenon.

In the study of Grant et al. in 2014 about comparing the effect of oral debriefing and video-assisted oral debriefing on B.Sc. nursing students function. It was shown that each debriefing method has positive effects on students function (18). These findings are in consistent with the results of our study. In a systematic review by Jones et al in 2014 with the aim of evaluating the effect of debriefing after simulation in occupational health education, it was observed that debriefing is effective on technical and vocational skill trainings such as awareness, team decision making, performance management, psychological skills. In four of the 10 trials studied in this systematic review, a statistical increase was observed in debriefing results without even including video-assisted debriefing (15). This study supports the findings of our study regarding the effect of debriefing on simulation-based learning. In the study of Shinnick et al in 2010 about the importance of debriefing in education for nursing students, it was shown that in the debriefing receiving group, knowledge achievements were significantly higher in comparison to the group without debriefing (19). These findings support the results of our study. Savoldelli et al in 2006, assessed debriefing with or without video playback among anesthesia residents. Results indicated that there were no significant differences in the two groups function (20). This study approves our study regarding similar effects of methods of debriefing on learning.

In contrast, in the study of Heukseok et al in 2014, nursing student's attitude towards debriefing after simulation was evaluated. Findings indicate that video-based debriefing has a positive effect on students learning (21). In a study evaluating the role of video playback in producing sustained behavioral change, Scherer et al. studied surgical resident's trauma resuscitation skills. Over a six-month period, resuscitations were taped and reviewed. For the first three months, team members were given verbal feedback regarding performance and their behavior failed to change. In the second three-month period, video playback and verbal feedback were combined, and within one month, behavior improved and was sustained for the duration of the study (20). Results of the above-mentioned studies indicate that video-assisted debriefing had a more positive effect on participants function in comparison to oral feedback. However, these findings are not parallel with the results of our study.

In the study of Erfanian et al in 2008, the effects of simulation-based and traditional education were examined on midwifery students' skills in pelvic examination. Results showed that the simulation-based group gained better ability in pelvic examination. Students claimed that simulation-based learning led to better learning and faster reminding the technique. Also, these students earned higher self-confidence (22). The positive effect of simulation-based learning and student's self-confidence seen in this study are consistent with our study. However, in this study, the effect of debriefing was not assessed and only few outcomes were studied. Another study in Iran by Najafi and colleagues in 2011 assessed pharmacology teaching using computerized simulations and pharmacy student's attitude towards this technique. The results of this study demonstrated that application of computer simulation was effective on improvement of deep and active learning of pharmacology in pharmacy students. Additionally, an acceptable (more than 60%) end of the season viewpoint satisfaction was seen (23). This study indicates that simulation-based learning, in addition to increasing students learning capability, increases student's motivation for learning. Student satisfaction was another aspect observed in this teaching technique. This study approves our study regarding positive effects of simulation-based learning.

In this study, in both groups receiving simulation-based learning, nursing students learning, self-confidence, satisfaction and function improved. This finding approves the positive effect of simulation-based learning. Methods of debriefing in simulation had positive and similar effects on both groups. Findings of studies accomplished in this field demonstrate that debriefing in the simulation process has a positive effect on learning. However, further studies are necessary for learning the exact methods and their effects.

As a conclusion, both methods of debriefing had positive effects on learning outcomes such as nursing student's knowledge, function, self-confidence and satisfaction. Nonetheless, no significant differences were observed between the two debriefing methods. The limitation of this study is that we cannot generalize the findings of the present study to all the curriculums of nursing, thus, advance studies for comparing different methods of debriefing with larger study sample are crucial. It is recommended that in the simulation-based learning process that is utilized in most nursing and midwifery faculties for preparing students to enter clinical field, debriefing be used immediately after simulation for consolidating simulation by methods of debriefing. In this situation, a rethinking opportunity for learning and a positive effect will be prepared for clinical-based nursing students.

Conclusion

Debriefing is one the most important levels of simulation-based learning and has a positive effect on nursing student's learning outcomes in the field of knowledge, function, self-confidence, satisfaction. In favorable with other studies, different methods used in debriefing such as oral discussion feedback and video-assisted oral discussion can be used as a part of this process. However, further studies are required for deciding which method is superior to other methods recommended.

The findings of this study could provoke lecturers and planning managers into using modern education methods. The objective of nursing education is reaching to a level of knowledge and function and transferring this information to clinical practice. Thus, by assessing the effect of different methods of debriefing on knowledge, function, satisfaction and self-confidence in nursing students and comparing these methods, we can design and implement appropriate interventions for increasing student's education and learning. Also, by using active teaching strategies in education, we could have a significant role in improving nursing students learning.

Acknowledgment

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