Archives of Anesthesiology and Critical Care (In Press); x(x): xx-xx.

Available online at http://aacc.tums.ac.ir

Research Article

Comparison of the Effect of Role-Playing and Traditional Teaching Methods on Teamwork and Self-Efficacy in Performing Advanced Cardiac Life Support by Undergraduate Anesthesia Students at Ahvaz Jundishapur University of Medical Sciences

Masoumeh Albooghobeish, Vahid Salmani*, Ali Khalafi, Nooshin Sarvi-Sarmeydani

Department of Anesthesiology, School of Allied Medical Sciences, Ahvaz Jundishapur University of Medical Sciences, Ahvaz, Iran.

ARTICLE INFO

Article history:
Received 24 November 2024
Revised 15 December 2024
Accepted 29 December 2024

Keywords:
Education;
Role-playing;
Traditional teaching;
Teamwork;
Self-efficacy;
Advanced cardiac life support

ABSTRACT

Background: Innovative teaching methods can equip undergraduate anesthesia students with the skills to perform advanced cardiac life support (ACLS) confidently and proficiently. Therefore, this study aimed to compare the impact of role-playing and traditional teaching methods on teamwork and self-efficacy in performing ACLS among undergraduate anesthesia students at Ahvaz Jundishapur University of Medical Sciences, Ahvaz, Iran.

Methods: This randomized controlled study was conducted on 47 third- and fourth-year undergraduate anesthesia students selected through a census sampling method. It involved a pre-test and post-test design. Participants were randomly divided into control and intervention groups. The intervention group received role-playing training, where they were divided into groups of six and each was assigned a role based on an ACLS scenario, which they enacted in interaction with other students. The control group, on the other hand, received traditional training, encompassing lectures and the use of mannequins. Teamwork performance was assessed using a scale developed by Sigalet et al., and the Resuscitation Self-efficacy Scale checklist was employed to evaluate students' ACLS skills. Ultimately, covariance analysis was conducted using SPSS version 26 to analyze the data.

Results: The two groups were homogeneous in terms of demographic characteristics (P value< 0.05). A comparison of post-test scores using ANCOVA revealed a significant difference between the groups. Specifically, after receiving role-playing training, the overall score of intervention group students in the post-test demonstrated a significant increase compared to the pre-test across three teamwork subscales and three self-efficacy subscales (P value= 0.001), unlike the control group (P value = 0.001). However, the recognition subscale did not exhibit significant results (P value = 0.347).

Conclusion: When compared to traditional training, role-playing training can significantly enhance self-efficacy and improve teamwork among undergraduate anesthesia students with regard to advanced cardiopulmonary resuscitation. Therefore, it is recommended to integrate role-playing into the anesthesia curriculum.

The authors declare no conflicts of interest.
*Corresponding author.
E-mail address: vahid69s@gmail.com

Introduction

Today, the rapid increase in cardiac arrest patients in hospitals and their low survival rates are recognized as a major global health problem [1]. Cardiopulmonary arrest is one of the most threatening situations that requires immediate action to protect life and prevent irreversible damage to the body's vital systems. It accounts for 80% of in-hospital deaths [2]. The survival rate of in-hospital cardiac arrest patients 24 hours after admission and at discharge is 23.7% and 6.4%, respectively [2-3].

Advanced cardiac life support (ACLS) has two components: the first is a set of coordinated team actions, including rapid diagnosis, initial life support, rapid defibrillation, advanced life support, and integrated postcardiac arrest care. These actions aim to prevent cardiac arrest through airway management, ventilatory support, and arrhythmia treatment [3-4]. The second component is a nontechnical part known as the cognitive, social, and individual skills of the resuscitation team members, which complement technical skills. The combination of these skills with technical skills can improve the team performance of rescuers and enhance patient safety [2].

On the other hand, in ACLS, the lack of skilled and trained personnel, the inability of members to quickly form a team, and unfamiliarity with ACLS algorithms and teamwork can lead to failed resuscitation [4-5]. Anesthesia nurses are the first to assist patients in critical conditions, and if they are unable to perform the necessary ACLS interventions correctly, accurately, and quickly enough, the risk of patient harm and loss of golden time for saving the patient increases. Therefore, undergraduate anesthesia nursing students must strengthen their skills before encountering patients [6].

Among the most important outputs of educational institutions is the cultivation of caregivers who provide the highest quality of clinical services to patients. Acquisition of correct and principled training from the beginning and throughout the course of study will yield better and more sustainable results. There are various methods for teaching advanced cardiac life support (ACLS). These include lectures, role-playing, group discussions, multimedia software, etc. with lectures and traditional teaching being the most common methods used in many universities [7].

Traditional teaching for ACLS is commonly used in many higher education institutions. However, it has many drawbacks that naturally reduce its teaching effectiveness. For example, this method is teacher centered, and teaching-learning activities are solely carried out by the teacher, with students playing no role in their learning process [8]. In other words, communication is centered around the teacher, and learning is largely dependent on their statements [9]. Another weakness of this teaching method is that the sessions are boring for students because they are merely passive listeners during the training. Reduced reasoning and critical thinking abilities in students are also the consequences of such teaching methods since the focus of teaching is on the teacher's instruction, and students have fewer opportunities to think and reason [8]. Another disadvantage of this type of teaching is the formal and rigid nature of the teaching environment which leads to a more superficial understanding of the classroom and reduces the integration of theoretical concepts and clinical abilities [10-11]. Finally, traditional teaching alone cannot meet the demands of the extensive changes in modern societies and the educational needs of learners. Therefore, it is necessary to adopt measures and methods for effective teaching [12-13].

One of the novel teaching methods that can replace traditional teaching is role-playing [14]. This method is used as a teaching tool to transfer knowledge, attitudes, and skills to students and is one of the effective teaching methods that leads to active learning [15]. While role-playing, the learner has the chance to encounter a structured clinical environment, which is not the case in traditional methods [16]. Also, the focus of this method is on interpersonal interactions between individuals. This type of learning is experience-based, and the individual puts themselves in the place of another person and tries to interact with others who are themselves role-playing [17].

Role-playing has numerous advantages: strengthening group performance and students' communication skills, improving decision-making skills, increasing student learning and critical thinking, enhancing clinical skills, and boosting self-confidence. For this reason, it is known as a novel and effective teaching method that leads to active and experiential learning [18]. In this method, a scenario based on a real clinical situation is prepared, students are assigned different roles, and they coordinate within the group according to their roles. Then, using drama techniques, a holistic teaching method is implemented that instills critical thinking and stimulates emotions and ethical values [19].

It has been shown that role-playing is a schematic approach in which interpersonal interactions are observed, analyzed, and interpreted by others. Also, this method, as a form of problem-based learning, increases learners' ability to face situations and make decisions. Learning through role-playing reduces anxiety and enhances learners' self-confidence. By helping learners in different situations and roles, asking and answering questions, as well as active listening, it promotes their professional knowledge, and by creating opportunities to participate in repetitive roles, rethinking, and habituation, it leads to more learning [20].

Despite the paramount importance of role-playing, limited research has been conducted on the use of this method in clinical settings. In a study by Marta et al. (2021) in Spain, it was concluded that role-playing training in undergraduate nursing students improved information sharing within the team and increased students' awareness of their own role and that of other team members [21]. In Iran, Khaledi et al. (2023) conducted a study to compare teaching using gamification and role-playing methods. They argued that the role-playing method could lead to increased learning of knowledge, skills, and self-efficacy in undergraduate nursing students in basic cardiopulmonary resuscitation [2]. Results of a study by Rodriguez et al. (2022) in Spain showed that training based on the role-playing method, compared to simulation, led to greater improvements in knowledge, self-efficacy, and communication skills in caring for the elderly in undergraduate nursing students [22].

Given the importance of enhancing students' knowledge and skills in ACLS, and the need for effective teaching methods to improve self-efficacy and teamwork, this study aimed to compare the effects of role-playing-based teaching and traditional teaching on undergraduate nursing anesthesia students at Ahvaz Jundishapur University of Medical Sciences. This is especially important considering the limited research on the impact of role-playing on improving teamwork and self-efficacy, particularly in undergraduate nursing anesthesia students.

Methods

This study is a randomized controlled trial with a pre-test and post-test design. It aims to compare the effects of role-playing versus traditional teaching methods on teamwork and self-efficacy in performing advanced cardiac life support (ACLS) among third- and fourth-year anesthesia nursing students at Ahvaz Jundishapur University of Medical Sciences, Ahvaz, Iran, in the first semester of the 2024-2025 academic year.

The study was conducted in several stages. First, an orientation session was held for anesthesia nursing students. In this session, the objectives and procedures of the study, including the number of sessions, duration of each session, pre-test and post-test procedures, the importance of ACLS, and the research method, were explained to the students. They were also informed that participation in the study was entirely voluntary and that all personal information and their scores would remain confidential. Ultimately, 47 third- and fourth-year students of anesthesia nursing who met the inclusion criteria were selected using the census method. They then signed informed consent forms and entered the study. Inclusion criteria were being a third- or fourth-year anesthesia nursing student, having completed the course Emergency Medicine 1, willingness to participate, and full cooperation in implementing the intervention. Participants were excluded if they missed one or more training sessions, were absent from the pre-test or post-test, were concurrently enrolled in another advanced CPR course, or withdrew from the study at any point. Then, a random number table was used for allocation, and students were divided into two groups: intervention and control. The intervention group (n=23) received role-playing training, while the control group (n=24) received traditional training. The sample allocation ratio was 1:1.

In the second stage, a pre-test was administered to both groups. This included a demographic questionnaire inquiring about age, gender, GPA, and academic term, as well as a self-efficacy checklist to assess their knowledge and confidence in ACLS skills. They were given 15 minutes to complete the 12-item questionnaire. In addition, Sigalet et al.'s teamwork performance scale was used to assess the teamwork of students in both groups. Students were divided into groups of six and played roles in scenarios related to ACLS, designed by the research team. This test was conducted in the practice room over a period of 3 hours. An anesthesia specialist with 10 years of experience in emergency departments who was not involved in the training process was selected as the evaluator. The selected evaluator was then familiarized with the checklist completion process by the research team, and any ambiguities were clarified. To prevent interference with the results, the evaluator was unaware of the assignment of students to the intervention and control groups, and the test was administered as single-blind.

In the third stage following the pre-test, all participating students initially received a 3-hour theoretical lecture on ACLS. Students in the intervention group practiced and learned the content through role-playing in a 3-hour educational session. In this method, students were first divided into groups of six, and then the research team (the lead researcher, the advisors, and the supervisor) determined five role-playing scenarios based on a clinical situation and assigned each student a role. The roles included:

1. Team Leader (Doctor) and Vital Signs Monitor: The primary surgeon overseeing the procedure and monitoring the patient's vital signs.
2. Airway Manager and Ventilator: Responsible for maintaining the patient's airway and providing ventilation.
3. Cardiac Massager: Performs chest compressions.
4. Pulse Checker and Defibrillator Operator: Monitors the patient's pulse and operates the defibrillator if necessary.
5. Medication Administrator: Administers medications as prescribed.
6. Coordinator and Timekeeper: Oversees the overall procedure and keeps track of the timing of interventions.

Students practiced CPR techniques under the guidance of researchers and faculty members, simulating real-life emergency situations to gain hands-on experience and develop critical decision-making skills. Through this experimental role-playing method and the comprehensive aspect of the learning process, students were allowed to practice critical decision-making, teamwork, and communication skills in a dynamic environment. The exact scenario of how the role-playing was implemented was carefully designed and used by the research team through reviewing relevant texts and articles and under the guidance of anesthesia faculty members and specialists in this field. All training was conducted under the supervision of a professional professor who had notable scientific and educational expertise in this field and was a member of the faculty of Ahvaz Jundishapur University of Medical Sciences. The lead researcher assumed responsibility for all training activities and educational facilitation. Finally, students in the control group were trained in a 3-hour educational session using the traditional and conventional teaching method, i.e., practicing on a manikin and receiving feedback from the instructor, on how to perform ACLS.

One week after the last training session, a post-test was conducted to assess the self-efficacy and teamwork of students in performing ACLS. Similar to the pre-test, all students in both the intervention and control groups were assessed. A checklist of the self-efficacy scale was used again to evaluate the self-efficacy of ACLS skills, and Sigalet et al.'s teamwork performance scale was used to evaluate the teamwork of all students.

The tool used in this research consisted of two sections: The first section included a checklist of the self-efficacy scale for ACLS skills to assess the level of self-efficacy of students while doing ACPR. In this study, self-efficacy in ACLS was measured using the self-efficacy checklist for advanced CPR. This checklist consists of 17 items in 4 subscales: Recognition (4 items), Debriefing and recording (4 items), Responding and rescuing (5 items), and Reporting (4 items). Each item was scored on a 5-point Likert scale: 5: "very confident" and 1: "least confident." The internal consistency of this checklist at the time of development had a Cronbach's alpha of 0.91, and in the study conducted by Jang et al., it was 0.87. The highest score on this checklist is 68, and the lowest is 17. The higher the score, the higher the self-efficacy in ACLS [23].

The second section was dedicated to assessing the quality of teamwork using a scale developed by Sigalet et al. This scale is a combination or modification of existing items from performance indices derived from research and pre-existing tools for evaluating the team behavior of participants, such as MHPTS and CTS. It consists of 12 items organized into three subscales: Communication (6 items, e.g., group members transfer information to others and the group leader in a timely manner), Roles and responsibilities (5 items, e.g., the group leader is clearly recognized by all group members), and Patient-centered care (1 item, e.g., the focus of communication and care is the patient). To differentiate the level of success for each item, a 5-point Likert scale was used, considering a behavioral description pattern (to reduce the subjectivity of observer assessments). The total score of this scale ranges from 12 to 60. Scores on the communication, roles and responsibilities, and patient-centered care subscales range from 6-30, 5-25, and 1-5, respectively. Higher total scores indicate better team performance. It is a standardized, valid, and reliable tool that has undergone psychometric testing. Factor analysis results, with an emphasis on roles and responsibilities (five items) and communication (six items) as subscale factors, support a three-factor solution (with a variance of 67.9%). The internal consistency of this tool was confirmed with a Cronbach's alpha of 0.90. Inter-rater reliability was also acceptable with an Intraclass Correlation Coefficient (ICC) of over 0.80 [24].

Initially, quantitative variables were described using means and standard deviations, and qualitative variables were described using frequencies and percentages. To compare the mean scores of self-efficacy, ACLS skills, and teamwork before and after training in each group, covariance analysis was used. The Kolmogorov-Smirnov test was used to assess the normality of quantitative variables. The significance level for all tests was set at 0.05, and all analyses were performed using SPSS 26 statistical software.

Results

This study aimed to compare the effects of role-playing and traditional teaching methods on teamwork and self-efficacy in Advanced Cardiac Life Support (ACLS) among 48 undergraduate anesthesia students from Jundishapur University of Medical Sciences, Ahvaz. Participants were randomly assigned to two groups of 24: a control group (traditional method) and an intervention group (role-playing).

Gender distribution was similar, with 18 females and 6 males in the control group and 16 females and 8 males in the intervention group (P value=0.525). Marital status also showed no significant difference, with 21 single and 3 married students in the control group, versus 19 single and 5 married students in the intervention group (P value=0.701). The groups were comparable in terms of academic term (P value=0.146); the control group had 16 students in their fifth term and 8 in their seventh, while the intervention group had 11 and 13, respectively. The mean age was 22.41 ± 2.08 years for the control group and 23.50 ± 4.47 years for the intervention group (P value = 0.899). Demographic details are shown in (Table 1).

(Table 2) provides descriptive statistics (means and standard deviations) for three variables:

Communications, Roles and Responsibilities, and Patient-Centered Care, as well as a total score of teamwork across two groups (Control and Intervention) and two time points (Pre-test and Post-test). The mean pre-test scores for Communications were 13.00 ± 2.93 in the control group and 13.50 ± 3.11 in the intervention group. However, the post-test Communications scores increased to 14.33 ± 2.68 in the control group and 16.58 ± 2.90 in the intervention group, indicating that the intervention group showed greater improvement from pre-test to post-test in this component compared to the control group. A similar pattern is observed in the Roles and Responsibilities component, where the intervention group demonstrated more notable gains. The overall teamwork questionnaire score also indicates that the intervention group experienced a more substantial increase compared to the control group. To account for potential baseline differences in teamwork scores, a one-way analysis of covariance (ANCOVA) was conducted, controlling for the pre-test scores. The results demonstrated a statistically significant improvement in communications and roles and responsibilities at the post-test stage for the intervention group compared to the control group (P value=0.001). Additionally, with controlling for the pre-test effect, patient-centered care in the intervention group was significantly higher than in the control group (P value=0.002). Specifically, the adjusted mean for communications, roles and responsibilities, and the patient-centered care score in the intervention group was higher than that of the control group. Additionally, the ANCOVA revealed that the post-test total score in the intervention group was significantly higher than that in the control group (P value < value<0.001). Further details, including the adjusted means for post-test self-efficacy, are presented in (Table 2).

(Table 3) presents descriptive statistics, including the mean and standard deviation, for the variables Recognition, Debriefing and Recording, Responding and Rescuing, Reporting, and the Total Score related to the Self-Efficacy Checklist for both the Pre-test and Post-test. In all components of self-efficacy, as well as the overall score of this checklist, the difference between the post-test and pre-test in the intervention group was greater than in the control group. Now, to examine whether this difference was significant, let's review the results of the one-way analysis of covariance.

To account for potential baseline differences in self-efficacy scores, a one-way analysis of covariance (ANCOVA) was conducted, controlling for the pre-test scores. The post-test scores in all indicators except for recognition (debriefing and recording, responding and rescuing, reporting, and total) were significantly higher in the intervention group compared to the control group (P value < value<0.001). Post-recognition in the intervention group did not differ significantly from the control group (P value=0.347).

Table 1- Comparison of the distribution of demographic variables in the control group and intervention.

Variable	class	Control (n=24)	Intervention (n=24)	P value
Gender	Female	18(75%)	16(66.7%)	0.525
	Male	6(25%)	8(33.3%)	
Marital status	Single	21(87.5%)	19(79.2%)	0.701
	Married	3(12.5%)	5(20.8%)	
Academic Term	Term 5	16(66.7%)	11(45.8%)	0.146
	Term 7	8(33.3%)	13(54.2%)	
Age (years)	Mean ± SD	22.41 ± 2.08	23.50 ± 4.47	0.899

Table 2- ANCOVA summary table for comparison of the effect of role-playing and traditional teaching methods on teamwork in performing advanced cardiac life support

Variable	Pre-test	Post-test	ANCOVA			
	Mean(SD)	Mean(SD)	Adj Mean	β	SE	P value
Communications						
Control	13.00(2.93)	14.33(2.68)	14.51	REF	REF	REF
Intervention	13.50(3.11)	16.58(2.90)	16.40	1.89	0.51	0.001
Roles and Responsibilities						
Control	14.33(2.68)	15.29(2.51)	15.02	REF	REF	REF
Intervention	13.45(2.34)	16.58(2.14)	16.86	1.84	0.51	0.001
Patient-Centered Care						
Control	2.79(1.47)	3.20(1.31)	3.31	REF	REF	REF
Intervention	3.01(1.26)	4.08(0.77)	3.98	0.67	0.20	0.002
Total						
Control	30.12(5.25)	32.83(4.69)	32.80	REF	REF	REF
Intervention	30.08(5.07)	36.71(3.72)	36.73	3.90	0.67	<0.001
Intervention	46.95(3.96)	62.00(4.02)	62.45	11.15	0.96	<0.001

Table 3- ANCOVA summary table for comparison of the effect of role-playing and traditional teaching methods on self-efficacy in performing advanced cardiac life support

Variable	Pre-test	Post-test	ANCOVA			
	Mean(SD)	Mean(SD)	Adj Mean	β	SE	P value
Recognition						
Control	11.71(4.08)	12.83(3.50)	12.53	REF	REF	REF
Intervention	10.95(2.22)	12.86(1.38)	13.11	0.56	0.59	0.347
Debriefing and recording						
Control	11.79(3.43)	12.62(3.11)	12.42	REF	REF	REF
Intervention	11.16(7.77)	15.12(1.89)	15.33	2.91	0.50	<0.001
Responding and Rescuing						
Control	13.21(3.21)	13.83(3.17)	13.81	REF	REF	REF
Intervention	13.17(2.08)	16.92(1.41)	16.93	3.11	0.35	<0.001
Reporting						
Control	11.42(3.28)	12.46(2.76)	12.54	REF	REF	REF
Intervention	11.67(2.77)	15.17(2.68)	15.07	2.52	0.47	<0.001
Total						
Control	48.12(8.06)	51.75(7.34)	51.30	REF	REF	REF

Discussion

This study aimed to compare the effects of role-playing and traditional teaching methods on teamwork and self-efficacy in performing ACLS among undergraduate anesthesia students at Ahvaz Jundisha-pur University of Medical Sciences, Ahvaz, Iran. The findings revealed that there was no significant difference in the mean pre-test scores between the intervention and control groups. This was expected due to the random stratified allocation of samples based on the academic term and an equal number of third- and fourth-year students in each group.

Moreover, a comparison of the mean pre-test and post-test scores in the control group did not show a significant increase in all subscales, which could be attributed to the use of the traditional teaching method for this group. Since the traditional teaching method, used for the control group, was more teacher-centered, students had little activity and participation in their learning process. Also, educational concepts were merely conveyed by the instructor to students who were passive listeners and did not interact with each other. This led to decreased self-confidence and an inability to connect with their peers in the team. Given that ACLS is a team-based activity and requires effective communication among group members, the traditional method cannot be effective for teaching it, as this method does not focus on enhancing students' teamwork skills. These characteristics led to student laziness and decreased motivation and interest in learning, which prevented them from striving for further learning. This can lead to the development of students who lack the self-confidence, skills, and ability to communicate in a team setting to provide professional services to patients in the clinic, which in turn reduces the quality of patient care and jeopardizes their safety. As the results of the study by Zhao et al. (2019) showed, the use of the traditional teaching method creates lower-quality learning because students are merely tasked with listening to what the instructor says and completing the assignments they are given, and they do not have any role in the educational process [8].

On the other hand, a comparison of the pre-test and post-test scores of students in the intervention group showed a significant difference. The scores of this group in the three subscales of the teamwork tool, including Communication, Roles and Responsibilities, and Patient-Centered Care, increased significantly. This improvement indicates the effectiveness of the role-playing teaching method in significantly improving students' teamwork skills in ACLS.

In our role-playing education, training sessions were designed to be dynamic and active. In these sessions, the students constantly interacted with the instructor and other students during training, were aware of their role in the team, and worked together to perform resuscitation according to the scenario by exchanging information. This increased the quality of their learning, improved communication between students, promoted acceptance of their roles and responsibilities, and ultimately improved their teamwork skills. Rau-rell-Torredà et al. (2021), in a study investigating non-technical skills, concluded that role-playing training in undergraduate nursing students improved information sharing in the team and increased students' awareness of their own role and that of other team members [21].

Also, a comparison of the pre-test and post-test scores of the intervention group in terms of self-efficacy showed that students had a significant increase in scores in the subscales of Debriefing and Recording, Responding and Rescuing, Reporting, and Total but did not have a significant increase in the Recognition subscale compared to the control group. This could be due to the similar impact of the traditional method and the role-

playing method on the learning of this subscale. Since the educational content related to this subscale was mostly theoretical, the traditional method could also lead to effective learning. However, overall, the self-efficacy of the intervention group as a whole (Total) increased more than the control group. In a study by Rodriguez et al. (2022), the results showed that undergraduate nursing students who were trained using role-playing acquired more appropriate competence in terms of knowledge, self-efficacy, and communication skills in caring for the elderly [22]. The results of these studies are consistent with the present study and indicate that the role-playing method can lead to improved teamwork skills and self-efficacy of students in patient care. As the results of the present study showed, role-playing, by providing opportunities for undergraduate anesthesia nursing students to observe, discuss, practice, repeat, and make roles seem real, can lead to the development of personnel who in the future can provide better and more professional services during ACLS, which is a very critical and important time, to patients.

Gibson et al. (2022) concluded that the use of participatory and interactive teaching methods can enhance clinical knowledge and skills, increase self-confidence, and subsequently reduce anxiety and stress in students [25]. The use of role-playing can also reduce stress and increase students' motivation to learn. This is because instead of just being listeners, they actively participate in the learning process and hold themselves responsible for their learning. They also freely ask questions and discuss skills during the training. On the other hand, group members help each other to better understand the content, and since a friendly participation is formed between them, their stress is well controlled. As Ghezzi et al. (2021) confirm, the use of active participation in education enhances students' motivation to learn and improves communication between the instructor and student. It also helps with the students' clinical reasoning skills and their decision-making ability [26].

On the other hand, a deficiency in clinical experience can result in student frustration and impaired learning, potentially compromising the realization of educational objectives. The role-playing method improves students' psychological readiness for learning because it makes technical skills appear real in an environment similar to a clinical setting, and this reduces stress and increases students' self-confidence, ultimately leading to improved self-efficacy. Khaledi et al. (2023) demonstrated that role-playing, by creating a realistic clinical environment and facilitating group work and role-playing, can significantly boost students' self-efficacy in basic cardiopulmonary resuscitation [2].

Moreover, in the role-playing method, all individuals, including both the actors and the observers, become involved in the actions and feelings of different roles and are encouraged to analyze these roles and situations. In fact, by visualizing various issues and topics, students better understand the patient's needs and condition and try to participate in ACLS within their assigned roles in the group. Kim et al. (2018) similarly found that role-playing, through group-based role-taking and real-world simulation, enhances students' understanding of clinical situations, self-efficacy, and critical thinking [27].

Of course, the studies cited above differ from the present study in various aspects such as the study environment, target group, the procedure, and even the duration of the study. On the other hand, the increasing trend towards innovative teaching methods prompted us to utilize role-playing. This method fosters high levels of interaction and engagement in simulated clinical scenarios and group activities, leading to improved student learning, motivation, teamwork, and self-efficacy in advanced life support. These benefits have the potential to significantly enhance healthcare education, leading to better performance by anesthesia teams, improved patient care, and ultimately, increased patient satisfaction.

This research, like other studies, faced certain limitations. One limitation was the small sample size and the fact that the study was conducted over two academic semesters. Future studies are recommended to recruit a larger sample size. Another limitation was the potential for information exchange between the control and intervention groups. The research team made efforts to control this by conducting training sessions for both groups on different days to minimize the possibility of information exchange. Future studies are also advised to investigate the use of the role-playing teaching method for teaching other courses in the anesthesia nursing undergraduate program and for students in other fields of study.

Conclusion

The findings of this study demonstrated that the use of the role-playing teaching model was more effective than traditional teaching in improving and enhancing the self-efficacy and teamwork of undergraduate anesthesia nursing students in performing ACLS. Given the attractiveness of this method, its minimal preparation requirements, and low implementation costs, it is recommended that faculty members comprehensively incorporate the role-playing method into their teaching to enhance students' ability to provide better and faster services to patients in real-world clinical settings.

Acknowledgments

This article was extracted from a master's thesis in anesthesia education conducted at Ahvaz Jundishapur University of Medical Sciences, Ahvaz, Iran, and

approved by the ethics committee of this university (Ref. ID: IR.AJUMS.REC.1403.166). The researchers express their sincere gratitude to the esteemed officials of the Research Deputy and the respected students who wholeheartedly cooperated in this study. To uphold ethical standards, students were explicitly informed that participation was entirely voluntary, would not impact their academic standing, and all information would be strictly confidential.

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