

Evaluation of Simulation Training in Paramedic Students for Advanced Airway Training

Sinan KARACABEY^{1*}, Erkman SANRI MD², Serkan Emre Eroglu³, Arzu Denizbasi⁴

¹Assistant Professor, Marmara University School of Medicine Emergency Medicine Department. Fevzi Cakmak Mah, Muhsin Yazıcioglu Cad. No: 10 Ust Kaynarca / Pendik / Istanbul

²Marmara University School of Medicine Emergency Medicine Department, Istanbul

³Associate Professor, Umraniye Training and Research Hospital Emergency Medicine Department, Istanbul

⁴Professor, Marmara University School of Medicine Emergency Medicine Department, Istanbul

Original Research Article

*Corresponding author

Sinan KARACABEY

Article History

Received: 24.03.2018

Accepted: 07.04.2018

Published: 30.04.2018

DOI:

10.36347/sjams.2018.v06i04.039



Abstract: The purpose of this study is to evaluate the difference of Advanced Airway training model regarding learning effectiveness by using multiple choice tests in pre- and post-training. In this retrospective study, records of pretest and posttests made to students who were trained in Advanced Airway simulation training in Paramedic Department 2, which was trained in Marmara University School of Health in 2016-2017, were examined. The success rates of the pre- and post-training tests are compared, and the success of the simulation method in Advanced Airway training will be investigated. There are 39 paramedic students in the working group. Of these participants, 23 (59%) were female, and 16 (41%) were male. The median (IQR) age was 21.0 (20.0-22.0) years. The median (IQR) values of the pretest and posttest scores were 30.0 (20.0, 40.0) and 80.0 (80.0, 90.0), respectively. As a result, this study shows that simulation training is very successful in airway management training, and simulation training can be an essential part of the learning process.

Keywords: Paramedic, Simulation Training, Airway.

INTRODUCTION

Simulation education was all studies which were done with simulation technology by using animations, mannequins and education materials, to make students practice to increase their capabilities.

Medical simulation usage was first started at the 1960's by anesthesia and reanimation fields. Besides medical fields, it is started being used at the beginning of the 1930's at military practice fields.

As known, the traditional medical curriculum has theoretical and practical studies. It is very important to hold practical studies for medical attendant to fully acquire interventional skills as needed. Unfortunately, at the traditional medical education methods, it may not always be a possibility practice interventional ways on patients. Usage of the medical practices on patients at conventional medical education lowered as the importance of the medical ethics and human rights increases each day. Impelemantion practice, as the essential part of the education, has limited usage on the patience and this relatively limits the training of the attendants. By this, a medical practice model which provides for attendants to use without harming the patient is the ideal education model[1,2].

The 2nd-grade paramedic students of our university have taken Advanced Airway

Training(AAT) class as the requirement of the 2016-2017 curriculum. These classes held with both traditional and simulational education model.

In this study, we aimed to evaluate the (AAT) education model, which given to 2nd-grade paramedic students of our university with simulation education model, affect the learning by performing a multiple-choice test on them.

MATERIALS AND METHODS

Study planned as a retrospective study. The records of the 2nd-grade paramedic department students, who taken (AAT) courses, of the Marmara University School of Health Service, were examined.

Advanced Airway Techniques were explained routinely in simulation classes. Later on, students are expected to show their (AAT) skills on a model with a

predetermined computer, which is prepared scenario according to updated AHA 2015 guide requirements.

Multiple-choice pretest and two months later posttests about the subject of the course are given routinely to the students in simulation educations. Exams have ten questions. Group's pretests and posttests formed same as one another. First five questions are about the equipment, and the other five questions are designed technics. These tests are recorded based on success level. Success levels are 0-45/100: failure, 45-70/100 average, 70-90/100 good, 90-100/100 successful. Exam results of the attendant will be recorded. The success of the simulation method on the (AAT) will be researched based on the success rates of the pretests and posttests.

School of Health Service, paramedic department students, who take simulation method of (AAT) in the 2016-2017 school year, without any missing record of pretests and posttests are included the study. The students whose retrospective records were unavailable were held out of the study.

Kolmogorov-Smirnov and Shapiro-Wilk tests used to evaluate the normal distribution of the variables. For continuous data median value and interquartile range(IQR) are used, and since there was no normal distribution, nonparametric analyzes are used to value differences. WilxonSignedRanked Test is used to compare pretests and posttests. SPSS 20.0 for Windows is used to for statistical analysis. P<0.05 accepted as meaningful.

RESULTS

There are 39 paramedic students in the study group. 23(%59) of these were women, and 16(%41) of these were men. Median(IQR) age was 21.0 (20.0-22.0). Median(IQR) values of pretest-posttest scores were, as in order 30.0 (20.0, 40.0) and 80.0 (80.0, 90.0). The median(IQR) differences between pretest-posttests scores are meaningful. This important difference is the cause of difference of the first and the second part of the pretests-posttests score difference (Table 1).

Table-1: Comparison of pretest posttest scores among participants

Index Median (IQR)	Pretest Ponits	Posttest Points	P value
Test	30.0 (20.0, 40.0)	80.0 (80.0, 90.0)	0.000
Test Pt-1	10.0 (10.0, 20.0)	40.0 (40.0, 50.0)	0.000
Test Pt-2	20.0 (10.0, 30.0)	40.0 (30.0, 40.0)	0.000

Test: question 1-10, Test Pt-1: question 1-5, Test Pt-2: question 6-10

DISCUSSION

Simulation education has become much more important as it is cheaper, provides more practice chance in short time, increased productivity in a stress-free environment, development of teamwork skills and most importantly practicing on the model instead of patience by this removing the possibility of harming the patients. [3,4]. Simulation education is recommended to increase permanence of the learning by attendants learning environment as a passive and structured approach, attendant implementation, critical thinking and learning with the self-reflecting way and avoiding the risk of harming the patient [5]. There is much-supporting evidence of the success of the management skills and patient safety education with simulation education among many of discipline and at the learning stage health professionals team interactions including pharmacy, medical and nursing. Also, simulation can provide an improvement in hard educational capabilities such as clinical understanding, self-reflecting, and self-trust. Finally, high-quality simulations can provide dynamic and flexible scenario-based education.

In a study made on paramedic students, among simulation educated and operating room educated students, success and complication rates were equal [6]. In another study made with pediatrics

assistants, simulation education can be a useful tool to value the acute-pediatic airway management. As a conclusion, simulation can be used to evaluate the someone's capabilities including knowledge base, equipment choice and suitable medicine along with laryngoscope [7]. In another study compared the medical students with traditional(standard AHA ACLS courses) education method users as ACLS information being held with high-quality simulation.

We showed in our study as familiar to others that simulation education increases the success of the learning progress. At these studies, we evaluated the theoretical information improvement and pretests and posttests as we questioned the study objectives on these scenarios. That's why we don't believe in constraints based on the told environments and models not precisely to be real is valid in our study.

Consequently, this study shows simulation education is quite successful on (AAT), and simulation education can be an essential part of the learning process. However, more prospective studies are required for this.

REFERENCES

1. Neely RC, Leacche M, Byrne CR, Norman AV, Byrne JG. New approaches to cardiovascular

- surgery. *Current problems in cardiology*. 2014 Dec 1;39(12):427-66.
2. Gaba DM, Howard SK, Flanagan B, Smith BE, Fish KJ, Botney R. Assessment of clinical performance during simulated crises using both technical and behavioral ratings. *Anesthesiology: The Journal of the American Society of Anesthesiologists*. 1998 Jul 1;89(1):8-18.
 3. Morey JC, Simon R, Jay GD, Wears RL. Error reduction and performance improvement in the emergency department through formal teamwork training: evaluation results of the Med Teams Project. *Health Serv Res*. 2003;37:1553-81.
 4. Beaubien JM, Baker DP. The use of simulation for training teamwork skills in health care: how low can you go? *Qual Saf Health Care*. 2004;13:151-6.
 5. Mieure KD, Vincent III WR, Cox MR, Jones MD. A high-fidelity simulation mannequin to introduce pharmacy students to advanced cardiovascular life support. *American Journal of Pharmaceutical Education*. 2010 Sep;74(2):22.
 6. Hall RE, Plant JR, Bands CJ, Wall AR, Kang J, Hall CA. Human patient simulation is effective for teaching paramedic students endotracheal intubation. *Academic Emergency Medicine*. 2005 Sep 1;12(9):850-5.
 7. Overly FL, Sudikoff SN, Shapiro MJ. High-fidelity medical simulation as an assessment tool for pediatric residents' airway management skills. *Pediatric emergency care*. 2007 Jan 1;23(1):11-5.