ORIGINAL ARTICLE

تقييم مستوى المعرفة والمهارات العملية والثقة بالنفس لأطباء التخدير في مجال الإنعاش القلبي الرئوي الدماغي بحلول العام الدراسي لجامعة شيراز للعلوم الطبية في ٢٠١٨

الخلفية: يلعب التدريب دوراً محورياً في التنفيذ الصحيح للإنعاش القلبي الرئوي (CPR). يؤثر التدريب المثالي على معرفة المتدربين و مواقفهم و مهاراتهم. يعد الإنعاش القلبي الرئوي من أهم الموضوعات الأساسية في برنامج التدريب على الإقامة و خاصة في مجال التخدير. كان الهدف من هذه الدراسة هو تقييم المعرفة ، و السلوك و المهارة للمقيمين في التخدير وفقا لآرائهم الخاصة.

الطريقة: كانت هذه الدراسة عبارة عن تعداد مقطعي و شمل التخدير المقيمين من السنة الأولى إلى الرابعة بعد التخرج (PGY). لم يتم تضمين المساعدين الذين كانوا مترددين في المشاركة أو الإجابة على جميع الأسئلة. أيضا ، تم الحصول على الموافقة المسبقة. كانت أداة جمع البيانات عبارة عن استبيان على مقياس ليكرت مكون من ٤٥ بنداً و خمسة اختيارات للباحثين. تم توزيع الاستبيانات على سكان التخدير و جمعها بعد استكمالها لتحليلها.

النتائج: كان هناك ٦٣ مشاركا في الدراسة. لم يظهر العمر و مستوى المعرفة للمجموعات الأربع فروق ذات دلالة إحصائية. كان مستوى المعرفة و المهارات في السنة الأولى و الثانية و السنة الأولى و الثالثة و السنة الأولى و الرابعة مختلفين بشكل كبير. كان مستوى المهارات و الثقة بالنفس لدى سكان السنة الأولى و الثانية مختلفًا بشكل كبير عن العامين الثالث و الرابع. لم يكن الموقف تجاه مستوى أهمية التدريب في غرفة العمليات مختلفًا بشكل كبير بين PGYs الأربعة. وافق أكثر من ٨٥٪ من المقيمين في السنة الأولى إلى الرابعة على أهمية تعلم الإنعاش في وحدة العناية المركزة و تكرارها لمدة ستة أشهر واثني عشر شهرا.

الخلاصة: يزداد مستوى المعرفة و المهارات العملية و الثقة بالنفس لدى مقيمي التخدير في مجال الإنعاش القلبي الرئوي بالتوافق مع التقدم في الدراسات العليا.

الكلمات المفتاحية: طبيب مقيم ، تخدير ، إنعاش دماغي قلبي رئوي

Assessing the level of knowledge, practical skills, and self-confidence of anesthesia residents in the field of Cardiopulmonary Cerebral Resuscitation by academic year of Shiraz University of Medical Sciences in 2018

Background: Training plays a pivotal role in correct implementation of Cardiopulmonary Resuscitation (CPR). Ideal training affects Knowledge, attitude, and skills of the trainees. CPR is amongst the most important and essential topics in residency training program, especially in the field of anesthesia. The aim of this study was to evaluate knowledge, attitude, and skill of anesthesia residents according to their own opinion.

Methods: This study was a cross-sectional census and included anesthesiology residents of first to fourth post graduate year (PGY). Assistants who were reluctant to participate or answer all the questions were not included in the study. Also, informed consent was obtained. The data collection instrument was a 45-item, five-choice researcher-made Likert scale questionnaire. The questionnaires were distributed among anesthesia residents and gathered after completion for analysis.

Results: There were 63 participants in this study. Age and knowledge level of the four groups did not show significant differences. The level of knowledge and skills of the first and second year, first and third year and first and fourth year residents were significantly different. The level of skills and self-confidence of first and second year residents was significantly different from the third and fourth year. The attitude toward level of importance of training in operating room was not significantly different among the four PGYs. Above 85% of the first to fourth year residents agreed with the importance of learning resuscitation in the ICU, and its six and twelve months' repetition.

Conclusion: The level of knowledge, practical skills and self-confidence of anesthesia residents in the field of cardiopulmonary resuscitation increases in accordance with advancement of post graduate year.

Keywords: Resident, Anesthesiology, Cardiopulmonary Cerebral Resuscitation

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شیراز یونیورسٹی آف میڈیکل سائنسز کے تعلیمی سال ۲۰۱۸میں تک کارڈیو پلمونری ریسیسیٹیشن کے شعبے میں علمی،عملی مہارت اور اینستھیزیولوجسٹ کے اعتماد بنفس کا اندازہ لگانا

بیک گراونڈ: تعلیمی اصولوں کے صحیح نفاذ میں تربیت ایک اہم کردار ادا کرتی ہے۔ طبی معاونین کے علم، رویہ اور مہارت کی کمی کی وجہ سے، تربیت، تربیتی معاونین کے اہم مقاصد میں سے ہے، خاص طور پر اینستھیزیا کے شعبے میں۔ اس تحقیق کا مقصد اینستھیزیا کے معاونین کے خیالات کی چھان بین کرنا تھی۔

روش: یہ مطالعہ ایک کراس سیکشنل مردم شماری تھا اور اس میں پہلے سے چوتھے سالوں میں اینستھیزیا کے خصوصی معاونین شامل تھے۔ جو اسسٹوڈنٹ اس میں حصہ نہیں لینا چاہتے تھے یا انہیں تمام سوالات کے جوابات دینے کی ضرورت نہیں تھی انہیں ہٹا دیا گیا ہے ۔ جان بوجھ کر رضامندی حاصل کی گئی۔ ڈیٹا اکٹھا کرنا ۴۵ آئٹمس پر مشتمل تھا، پانچ انتخابی محققین کا تیار کردہ لیکرٹ پیمانے کا سوالنامہ۔ وارڈ راؤنڈ کے دن، ماہانہ گشت اور کلاسز کو اینستھیزیا ریسرچ اینڈ انٹینسیو کیئر سنٹر اور اینستھیزیا وارڈ آفس میں تقسیم کیا گیا

نتیجے: ۶۳ شرکاء نے حصہ لیا کہ چار گروپوں کی عمر کا فرق اور علم کی سطح اہم نہیں تھی۔ پہلے اور دوسرے سال، پہلے اور تیسرے سال اور پہلے اور چوتھے سال کے معاونین میں علم اور مہارت کی سطح میں فرق نمایاں تھا۔ تیسرے اور چوتھے سال کے ساتھ پہلے اور دوسرے سال کے رہائشیوں کی مہارت کی سطح اور خود اعتمادی میں نمایاں فرق پایا جاتا ہے چار سالوں کے درمیان آپریٹنگ روم میں تربیت کی اہمیت کی سطح میں فرق اہم نہیں تھا۔ ICU میں ریسیسیٹیشن سیکھنے کی اہمیت کے بارے میں، پہلے سے چوتھے سال کے رہائشیوں نے چھ ماہ اور بارہ ماہ کے وقفے سے ۸۵ فیصد سے زیادہ اتفاق کیا

سفارش: تعلیمی سال کے اضافے کے ساتھ کارڈیو پلمونری ریسیسیٹیشن کے میدان میں رہائشیوں کے علم اور عملی مہارتوں اور خود اعتمادی کی سطح میں اضافہ ہوتا ہے۔

کلیدی الفاظ: ماہر اسسٹنٹ، اینستھیسیولوجی، کارڈیو پلمونری ریسیسیٹیشن

بررسی میزان سطح دانش، مهارت عملی و اعتماد به نفس دستیاران تخصصی رشته بیهوشی در زمینه احیاء قلبی- ریوی به تفکیک سال تحصیلی دانشگاه علوم پزشکی شیراز در سال ۱۳۹۷

زمینه و هدف: آموزش اجرای صحیح اصول احیاء نقش اساسی دارد. به دلیل نقص دانش، نگرش و مهارت دستیاران پزشکی این آموزش یکی از اهداف اصلی آموزش دستیاران به ویژه رشته بیهوشی می باشد. هدف از این مطالعه بررسی دیدگاه دستیاران تخصصی رشته بیهوشی بود.

روش: این پژوهش سرشماری مقطعی و شامل دستیاران تخصصی بیهوشی سال اول تا چهارم بود. دستیارانی که تمایل به شرکت نداشتند و یا پاسخ دهی به همه سوالات نداشتند، حذف شدند. رضایت نامه آگاهانه گرفته شد. جمع آوری داده با پرسش نامه محقق ساخته طیف لیکرت پنج گزینه ای ۴۵ سوالی بود. در روز برگزاری گراند راند بخش، کشیک های ماهیانه و مراجعین به مرکز تحقیقات بیهوشی و مراقبت های ویژه و دفتر بخش بیهوشی توزیع شد.

یافته ها: تعداد ۶۳ نفر شرکت کردند که تفاوت سن و سطح دانش چهارگروه معنادار نبود. تفاوت سطح دانش و مهارت در دستیار سال اول و دوم، اول و سوم و سال اول و چهارم، معنی دار بود. تفاوت سطح مهارت و اعتماد به نفس دستیاران سال اول و دوم با سال سوم و چهارم معنی دار بود. تفاوت سطح اهمیت آموزش در اتاق عمل در بین چهار سال معنی دار نبود. در مورد اهمیت فراگیری احیاء در آی سی یو، دستیاران سال اول تا چهارم نسبت به فاصله تکرار آموزش شش ماهه و دوازده ماهه بیش از ۸۵ درصد نظر موافق داشتند و معنادار نبود.

نتیجه گیری: میزان دانش و مهارت عملی و اعتماد به نفس دستیاران در زمینه احیاء قلبی-ریوی با بالا رفتن سال تحصیلی بیشتر می شود.

واژه های کلیدی: دستیار تخصصی، رشته بیهوشی، احیاء قلبی- ریوی

INTRODUCTION

Cardiopulmonary Cerebral Resuscitation (CPCR) was first used in the early 1960s by Safar and Kouwenhoven in a pulseless patient using a technique consisting of mouth-to-mouth ventilation and closed chest compressions (1, 2).

Given the importance of disciplines such as emergency medicine and cardiology, as well as anesthesia, which are at the forefront of dealing with patients with cardiac arrest, the knowledge and familiarity of the residents of these disciplines with the principles of CPR is vital and highly important (3).

Theoretically, cardiopulmonary resuscitation is the establishment of ventilation and blood circulation until return of spontaneous circulation (4); and in practice, it is revitalizing the two vital organs; heart and lung, to regain living. Cardiopulmonary resuscitation incorporates two main parts: Basic Life Support (BLS) and Advanced Cardiac Life Support (ACLS) (5).

Since significant brain damage occurs 4-6 minutes after oxygen deprivation, lack of knowledge and sufficient skills of rescuer leads to death of the victim (6) and hence cardiovascular disease is the most common cause of death in the world (7).

The role of CPR training for health professionals has been emphasized in a study on the level of skills and motivation of residents in fields related to cardiopulmonary resuscitation such as anesthesia and nursing. What's more, proper implementation of the principles of cardiopulmonary resuscitation plays an essential role and the level of knowledge and skill of the resuscitator depends on this training. Tragic deaths can be prevented by a few hours of theoretical and practical training (8).

In Park study in 2016, it was found that the attitude, knowledge and self-efficacy of nursing students before and after training were significantly increased (9).

Another similar study on medical students showed that after anesthesia rotation and also in concordance with increasing years of education, skills and attitudes in performing correct and efficient cardiopulmonary resuscitation has been improved (2, 10).

Lack of knowledge, attitude and skills of medical students and residents greatly affects treatment and initial evaluation of hospitalized patients. CPR training is one of the principal educational objectives of anesthesiology residents during their educational year.

The purpose of this study was to evaluate the knowledge, skills and self-confidence of anesthesiology residents, based on their post graduate year, in the field of CPR to evaluate the efficiency of the current educational program.

METHODS

This study was a cross-sectional census study conducted on all anesthesiology residents from the first to the fourth year in Shiraz University of Medical Sciences.

Residents' perspectives were assessed in four main domains, including the importance of cardiopulmonary resuscitation practical training in operating theater and intensive care unit and the level of knowledge, skills, and self-confidence of residents.

Residents who were not willing to participate in study or did not fulfill the questionnaire completely were excluded from the study. Informed consent obtained from participants. Data collection was through a researcher-made questionnaire with ten years of experience

in CPR training programs. It consisted of 45 questions and a five-point Likert scale in which the first 10 questions (with a value of 1 to 5) were about the assessing knowledge of cardiopulmonary resuscitation and seven questions were related to the needs of cardiopulmonary resuscitation training in the operating room. Ten questions related to assessment of cardiopulmonary resuscitation training in ICU and 18 questions on the level of confidence of residents in performing cardiopulmonary resuscitation.

Questionnaires were distributed among residents of anesthesia at the end of Grand Round, in operating theater or intensive care units upon residents' visits of Anesthesiology Research Center and department office. Mean, standard deviation, frequency, and frequency percentage were used for descriptive statistics.

One-way analysis of variance test was used for inferential statistics and Tukey post -hoc test was used if there was a significant difference. The score of each part of the questionnaire was considered as a comprehensive score. SPSS software version 13 was used for data analysis.

RESULTS

The total number of 63 residents was participated in the present study including 15 first, 17 second, 15 third, and 16 fourth post graduate year students. It should be noted that 15 (23.8%) of them were married and 48 (76.2%) were single. From these, 22 participants (34.9%) were male and 41 (65.1%) were female.

The minimum and maximum ages of residents were 38 to 45 years, respectively, with a mean and standard deviation of 33.5±38 4.38. Considering all four groups (PGY;1-4), there was no difference between the variables of age and level of knowledge

Comparing the level of knowledge and skills between the academic years in pairs with repeated measures and Mann-Whitney test, it was found that the difference between first and second, first and third year residents, as well as first and fourth year assistants is significant ($p \leq 0.001$) (Table 1).

Comparing the level of skills and self-confidence between the academic years with repeated measures test and Mann-Whitney test, there was found a similarity between the third and fourth year residents but it varied significantly among other PGYs ($p \leq 0.001$) (Table 2).

Assessing the attitude toward the level of importance of CPR training in operating room, there was no significant difference between all four different academic years. All first to fourth year residents, over 80 percent, were very concerned about the importance of CPR training in operating room.

Regarding the importance of time interval of holding and learning CPR in intensive care units , all first to fourth year residents agreed with repetition interval of six and twelve months with a percentage of over 85% (very high) . There were no statistically significant differences among PGYs.

Table 1. Comparison of mean and standard deviation of knowledge and skill level among residents of different post graduate year

Academic year	Mean± SD	P value
First year resident	0.25±65.2	0.0001≤ p
second year resident	2.0±30.19	
First year resident	2.0±65.25	. 0.0001≤ ٠p
third year resident	2.0±20.15	
First year resident	2.0±65.25	. 0.0001≤٠p
fourth year resident	2.0±20.19	
second year resident	2.0±30.19	0.216≤ p
third year resident	2.0±20.15	
second year resident	2.0±30.19	0.17≤ p
fourth year resident	2.0±20.19	
third year resident	2.0±20.15	0.318≤ p
fourth year resident	2.0±20.19	

Table 2. Comparison of mean and standard deviation of skill and self-confidence level among residents of different post graduate year

Academic year	Mean± SD	P value
First year resident	3.0±1.01	0.001≤p
second year resident	2.0±80.04	
First year resident	3.0±1.01	0.001≤p
third year resident	2.0±60.127	
First year resident	3.0±1.01	0.001≤p
fourth year resident	2.0±50.1	
second year resident	2.0±80.04	0.001≤p
third year resident	2.0±60.127	
second year resident	2.0±80.04	0.001≤p
fourth year resident	2.0±50.1	
third year resident	2.0±60.127	0.037≤p
fourth year resident	2.0±50.1	

DISCUSSION

Cardiopulmonary resuscitation is a process in which, with optimal measures, efforts are made to restore the activity of the heart and lungs and includes a set of activities that can bring a group of patients, who are certain to die, to survive with the efforts of trained individuals. Appropriate resuscitation by anesthesiology residents is necessary and requires adequate training. Shortage of studies on medical residents, especially in the field of anesthesiology, makes it difficult to compare the obtained results with other studies.

Considering that this study examines the level of knowledge, skills, and self-confidence of anesthesiology residents in the field of CPR based on the academic year, and also the efficiency of residency education program from residents' perspective subjectively, results have shown that level of knowledge and practical skills and confidence in the field of CPR improves in concordance with increase of PGY. Another study found that lack of regular and standard training hindered the success of cardiopulmonary resuscitation. (11). Another study revealed that CPR training is mandatory for physicians and nurses to improve their knowledge and self-confidence (12).

Our results indicated that the level of skills and self-confidence of anesthesia residents increased significantly in concordance with PGY. It can be inferred that this was caused by higher experience achievement, more patients to be visited and more being mastered. On the other hand, participation in theoretical educational programs & workshops is effective in the level of knowledge, practical skills, and self-confidence of anesthesiology residents. This is consistent with the study of Isazadeh et al, Which showed that level of knowledge and skills of medical students is significantly increased after training (8, 13).

Some studies have shown that after 6 months there is a significant reduction in resuscitation skills. Others denoted that holding a training course six months after initial training significantly improves the knowledge and skills of people who have been retrained. Therefore, the above studies and the findings of the present study indicated that periodic training is necessary to maintain and strengthen the skill of performing CPR (14).

Another study showed that, residents of disciplines with more exposure to cardiac arrest patients were more aware of the scientific principles of CPR (3).

Individual characteristics of the age and attitude toward importance of CPR training did not vary between different PGYs and so were consistent with other studies. It can be concluded that the importance of education is similar to all anesthesia residents aside from their PGY (15).

In terms of the importance of CPR training in the operating room and ICU, couple comparisons were not relevant and anesthesia residents of all academic years have considered it very important and they were influenced by the educational program. It is consistent with a similar study which showed upon passing anesthesia rotation, medical students' knowledge and skills score clearly and significantly increased. It reminds the need for CPR training during anesthesia internship rotation and the importance and effect of cardiac resuscitation training. Therefore, knowledge alone cannot indicate performance of residents in realistic and stressful practical conditions; however, clinical performance may be much lower than theoretical score (2).

The statistically significant difference in level of knowledge in pair comparison between first and third PGY indicated that training in first year of residency had the greatest impact on attitude of residents towards their knowledge.

Consistent with these results, in a study conducted with the participation of second-, third- and fourth- year residents, the level of knowledge about baseline and advanced resuscitation was moderate (15).

The results of the current study showed that there are high levels of knowledge and awareness of anesthesia residents after training, confirming the effect of rate of exposure to patients with cardiac arrest, as well as the advanced learning and experiencing clinical aspects of CPR. Also, anesthesia

residents declared to have higher mean in knowledge than other specialties. This finding was consistent with previous studies that showed among various medical residency disciplines , only two disciplines of emergency medicine and cardiology had an upward trend in the level of knowledge of CPR during PGYs (first, second, and third academic years) . The first year emergency medicine residents had an average of 9.5, which changed to 13.8 in the third year, which was a statistically significant change. Also, both undergraduate medical and nursing students, after anesthesia rotation, had significant improvement in knowledge and skills of CPR (3, 16). Some studies denoted that medical residents' knowledge in the field of CPR was clearly low and the remarkable point was that in most specialty fields except cardiology, emergency medicine and anesthesia, knowledge of the third year residents were even lower than that of the first year. It indicates a significant pitfall in medical residency training program related to CPR. Regular and consecutive cardiopulmonary resuscitation training programs play a crucial role in fixing the knowledge, skills and self-confidence of residents. In order to increase the awareness and competence of anesthesiology residents, these training programs should be organized and performed at appropriate intervals. It also emphasizes the inclusion of compulsory CPR training programs for all medical students and reassessment of their skills during their educational years and even in most refreshing courses before enrolment in real field and also in residency training program. In addition, the development of new strategies in CPR training along with practical and applied methods seems inevitable.

In conclusion, the level of knowledge, practical skills, and self-confidence of anesthesiology residents in the field of cardiopulmonary resuscitation improves as post graduate year increases.

Limitations of the study were cross-sectional method and the small number of residents in each academic year as well as not using more valid clinical methods such as interviews.

The authors suggest that the data obtained from this study can be re-examined and compared as an objective data in future studies. Medical educational administrators should pay more attention to anesthesia residency training program in the field of CPR.

Future studies incorporating larger volume of participants should be conducted to determine the appropriate time interval for refreshing programs.

Ethical considerations

Ethical issues including plagiarism, informed consent, misconduct, data fabrication and/or falsification, double publication and/or submission, redundancy, etc. have been completely observed by the authors. The ethics committee of Shiraz University of Medical Sciences approved this research, ethics code IR.sums.med.re.1397.366.

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