



SIMULATION OF PEDIATRIC CARDIOPULMONARY RESUSCITATION FOR GRADUATES



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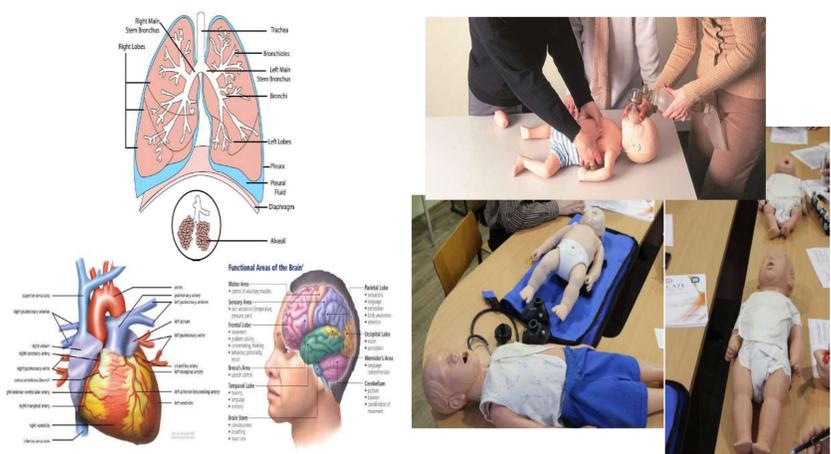
Higher State Educational Establishment of Ukraine "Bukovinian State Medical University", Chernivtsi

Introduction.

In 1988 the American Heart Association (AHA) and the American Academy of Pediatrics (AAP) introduced first pediatric courses in pediatric basic life support (PBLIS) and pediatric advanced life support (PALS). Since 2004 the use of automated external defibrillators (AED) on children was approved by the AHA. In 2010 the AHA updated their CPR guidelines which stated the importance of high quality CPR and the changes of the order of interventions from airway, breathing, chest compressions (ABC) to CAB.

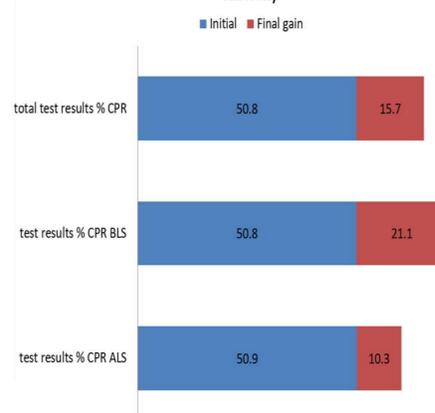
Approved national pediatric cardiopulmonary resuscitation (CPR) recommendations are not still available in Ukraine. In 2005 AHA developed a revolutionary product that allowed anyone to learn the core skills of basic CPR, use of AED and choking relief in just 20 minutes. The AHA's PBLIS and PALS courses have been updated to reflect new science in the 2015 AHA Guidelines update for CPR, these recommendations were used as basis for working-out of both basic pediatric CPR training and set of tests for evaluation of its effectiveness. CPR practical skill with peculiarities in childhood is a stage of a final practically oriented exam in Pediatrics.

The aim of the study was to evaluate the graduates' academic performance in pediatric CPR training and self-assessment of participation in CPR simulation.

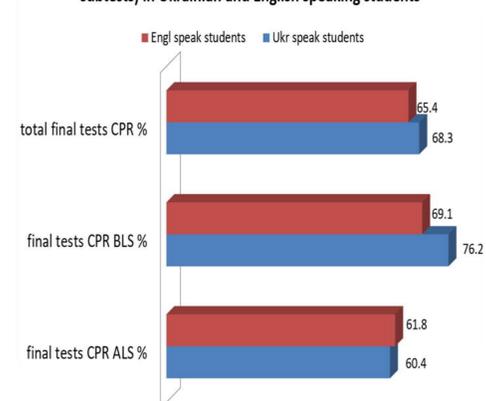


Results and discussion

Progress in final testing of CPR skills (total, BLS and ALS subtests)



Results of final testing of CPR skills (total, BLS and ALS subtests) in Ukrainian and English speaking students



The results of the initial testing in the set of total test, BLS questions were on average of 50,8% of the correct answers and finally there was an improvement up to 71,9%. The total final test CPR for both the category students were almost same whereas there was a significant difference in the BLS CPR in English and Ukrainian speaking students, especially depending on gender. This difference was associated with increased anxiety level in English speaking females. Results of the self evaluation for CPR simulation and of students' self confidence in Pediatrics are presented in row pictures. The only significant difference in results of these two surveys of different speaking students can be seen in safe environment and simulation as high quality tool to aid in improving students abilities. There are the significant indices of correlation between the academic performance and self assessment evaluations (see table)

Material and methods

In 2018-19 academic year training CPR class was introduced in studying of Ukrainian and English speaking 6 year students (totally

- ✓ 11 groups,
- ✓ 141 students,
- ✓ 71 males and 70 females,
- ✓ 64 Ukrainian and 77 English speaking graduates.

Four low- and mid-fidelity manikins (three infants, one toddler) and Vital Sign Simulator as a monitor / defibrillation unit were used to master CPR skills.

Students were working with the teacher/instructor to complete BLS skills practice and skills testing. Students also complete a written initial and final testing.

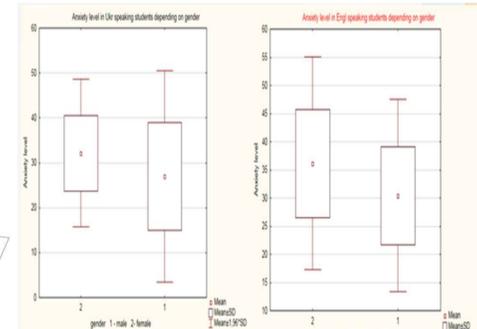
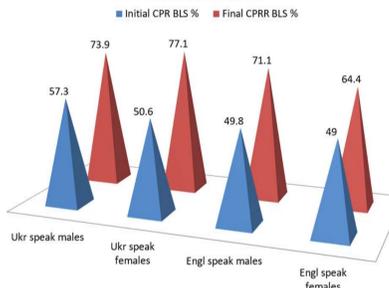


The course duration was 1,5 hours. Course was divided in 7 stages:

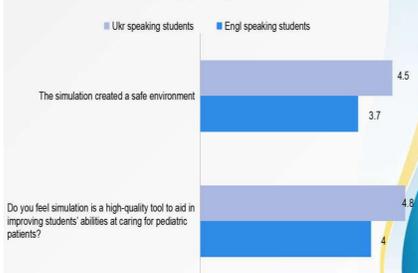
- (1) initial paper testing - 10 min;
- (2) instructor's introduction - 5 min;
- (3) demonstration of 6 short training videos - 25 min;
- (4) comments and discussion - 5 min;
- (5) students' practice with manikins - 30 min;
- (6) cross-exam and debriefing - 5 min;
- (7) final paper testing - 10 min.

- Training class was incorporated within module 5 Pediatrics.
- The place of course was a modernly equipped class based on the Chernivtsi Hospital for Emergency Care or lecture hall in Pediatric Clinic.
- Graduates answered questionnaires on anxiety testing (Sarason IG, 1980), (Nist and Diehl, 1990)
- Initial and final graduates' academic achievements in Pediatrics were used for association assessment.

Progress in CPR BLS testing in Engl and Ukr speaking students depending on gender



Significant differences in evaluation forms answers in Ukr and Eng speaking students



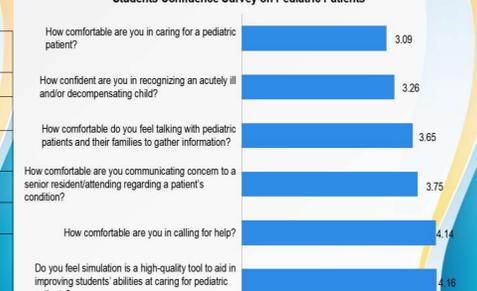
Results of self evaluation for of CPR simulation



Significant indices of correlation between academic performance and self-assessment evaluation

Indices	Indices	Correlation index
Do you feel simulation is a high-quality tool to aid in improving students' abilities at caring for pediatric patients?	Improvement in CPR BLS test	r=0,4; p<0,03
These CPR simulation cases provided are relevant to my work.	Improvement in CPR BLS test	r=0,45; p<0,01
How confident are you in recognizing an acutely ill and/or decompensating child?	Improvement in CPR BLS test	r=0,39; p<0,04
This simulation case was effective in teaching basic resuscitation skills.	The simulation cases were realistic	r=0,38; p<0,04
	The simulation cases were realistic	r=0,40; p<0,05
How comfortable do you feel talking with pediatric patients and their families to gather information?	Improvement in CPR BLS test	r=0,45; p<0,02

Students Confidence Survey on Pediatric Patients



Conclusions

1. CPR training significantly improved graduates' knowledge and practical skills of BLS algorithms. Difference was caused by insufficient gaining of correct answers by English speaking females with higher testing anxiety level.
2. Grade of improvement in CPR tests was significantly associated with graduates' high assessment of simulation as a high-quality tool for pediatric patients; confidence in recognizing an acutely ill child, as well as level of comfort while gathering information with children.
3. Graduates considered, that CPR simulation cases were relevant to their work and effective in teaching basic resuscitation and first aid management skills, promoted reflection and team discussion, improved students' basic pediatric CPR skills.