AP051

Effectiveness of basic life support online course on students' learning

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Objective: To describe the outcomes on undergraduate Nursing students' learning following the basic life support online course (e-BLS).

Methods: In this quantitative, quasi-experimental research design study, the online course was developed and applied as an educational intervention to 94 Nursing bachelor degree students. Pre-test and post-test was used to assess theoretical learning and checklist simulation and CPR feedback devices to assess the skills of the 62 students who completed the course. Experts and students evaluated the online course.

Results: There was a significant increase in learning of the 62 students who concluded the course, pre-test (6.4 ± 1.61), post-test (9.3 ± 0.82), $p < 0.001$ in paired t-test. In simulation practice, the results as high scores (9.1 ± 0.95) and the *feedback devices' registers* support the learning, 90% students checked response, 98% exposed the chest, 97% checked breathing, 76% called emergency services, 92% requested a defibrillator, 77% checked pulse, 87% positioning hands properly, 95% performed 30 compressions per cycle, 89% performed compressions of at least 5 cm of depth, 90% released chest after each compression, 97% applied 2 breaths, 97% used Automatic External Defibrillator, 100% positioned blades correctly. The course was well evaluated by experts and students.

Conclusion: The online course was effective as a method of teaching and learning, students applied the actions of Basic Life Support correctly in the practical simulation. In addition, the course can be used in the continuing education of health professionals, since short-term online training is more likely to improve learning and the self-efficacy of the BLS Provider.

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AP052

"Dare to save a life at school": Implementation of a CPR+AED sequence in the PE curriculum

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In Europe, about 500,000 people suffer sudden cardiac arrest each year, with a survival rate of 5–10% (ERC, 2015). Bystander cardiopulmonary resuscitation (CPR) could increase this survival rate by 2–3 times. Unfortunately, less than 20% of the general population is able to perform it effectively (Plant & Taylor, 2013). Besides, most of the public facilities are now equipped with automated external defibrillators (AEDs). In a physical literacy perspective (Whitehead, 2013), PE teachers are ideally placed to teach basic life support (BLS) to their students (Colquhoun, 2012).

Eleven PE teachers were trained to teach a CPR + AED sequence adapted to the Belgian French community PE curriculum. 307 students (17.1 ± 0.8 years old) performed hands-on manikin-based instruction and practice during 6 sessions of PE. Knowledge of the CPR + AED protocol was assessed by questionnaire at baseline (T0), after the intervention (T1) and after a three months' follow-up period (T2). Practical application of the CPR + AED protocol was assessed with an evaluation grid and a manikin measuring CPR performance at T1 and T2. A process analysis was performed from the video recording of the sessions and from satisfactory questionnaires.

Preliminary results from the 6 PE teachers who taught the sequence to their students ($n = 155$) during the first part of the school year exposed significant improvements from T0 to T2 in the knowledge of the CPR + AED protocol (from $7 \pm 3.4/20$ to $16 \pm 2.4/20$; $p < 0.001$). Average score on the evaluation grid was $16 \pm 1.7/20$ at T1 and remained rather constant at T2 ($15.3 \pm 1.8/20$). Depth and rate of chest compressions remained stable between T1 and T2 (≈ 105/min.; ≈ 41 mm). Volume of breaths decreased significantly from T1 to T2 (590 ± 443 ml to 305 ± 248 ml; $p < 0.001$).

The CPR + AED sequence led to encouraging improvements of the knowledge, abilities and confidence of the students. PE teachers felt valuated and able to contribute autonomously to this major public health challenge.

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AP053

eLearning to develop non-technical skills and attitudes towards patient safety? Findings from 3 years experience with ELPAS

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Background: Although e-learning has become a standard teaching approach in medical education internationally and is employed for a wide variety of subjects and disciplines, it is still rarely used to approach patient safety subjects. Against this background we developed an online course on patient safety aligned with the principles of problem-based-learning and implemented it in the third year of the undergraduate medical curriculum. The course focuses on teamwork, error management and situational awareness and provides important background knowledge to develop non-technical skills.

Methods: Several quasi-experimental, longitudinal within-subjects studies were used to measure the effects of the e-learning intervention on knowledge, attitudes and specific meta-strategies.

Results: Both cognitive and affective objectives are reached by the intervention. Not only relevant gains in specific knowledge (32% vs. 72% correct answers, $p < .001$, $d = 1.69$) could be proven, but also improved systems thinking (58.7 vs. 61.3, $p < .001$, $d = .31$). Furthermore, students changed attitudes towards patient safety significantly: They consider patient empowerment more important (5.21 vs. 5.68 $p < .001$; $d = .47$), feel better prepared for safe practice (4.12 vs. 4.7, $p < .001$, $d = .58$) and feel more comfortable with error disclosure (4.08 vs. 4.31, $p < .05$, $d = .19$). Students also change their opinion towards important non-technical skills and teamwork: They rate mutual performance monitoring (4.1 vs. 4.3, $p < .001$, $d = .53$) and speaking-up behaviour (3.75 vs. 3.91, $p < .001$, $d = .53$) more important than the control group.