

Basic life support: performance of a cost-effective educational program in layperson training

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Introduction: Cardiovascular diseases are amongst the main causes of death worldwide. Half of the 200.000 cases of cardiac arrest (CA) that occur in Brazil each year are out-of-hospital CA, and only 10% manage to survive. Laypersons are known to potentially give assistance to CA victims until emergency medical service arrives, improving patient's outcome. In this context, training layperson to provide initial care in medical emergencies is a valuable resource, but studies concerning Basic Life Support (BLS) training to this population are scarce. Therefore, students of the Faculty of Medicine of the University of São Paulo developed and applied a cost-effective method in an educational event during the 4th Surgical Mission Trip of the *Bandeira Científica* Project (an academic extension) in 2016.

Objectives: Primary - Provide a cost-effective educational program for laypersons training on the approach of some emergencies, including cardiopulmonary resuscitation (CPR). Secondary – Assess previous knowledge of this population on BLS, as well as the teaching method's efficiency.

Methods: Training of the participants involved six scenarios of medical emergencies during 90 minutes, including CPR, in accordance with the 2015 American Heart Association (AHA) Guideline. Mannequins were made with PET bottles partially filled with water, shirts and newspaper. The participants answered a validated questionnaire before and immediately after training, with 9 questions that addressed knowledge about CA victim care, focused on compression-only CPR. Each question had a score ranging from 0 (incorrect) to 2 (correct), and total score was given in percentage. Statistical analysis was performed with the R Commander software, using paired T Test to assess overall and main concepts performance, and ANOVA to compare groups. Participants with inadequately filled documents were excluded from the study.

Results: 101 people attended the event. 96 were included in the study: 69 lay people, 17 health professionals and 10 health students. 65% have completed high school. There was an improvement of overall performance after training (meanbefore: 62.7%, meanafter: 75.8%, $p < 0.01$), which also occurred in the following main concepts: "mouth-to-mouth rescue breathing not necessary" ($P < 0.01$), "risk of contamination" ($p < 0.01$), "compression technique" ($p < 0.01$). The concepts "emergency recognition" and "chest compression role" did not present significant statistical improvement, but had good means before training: 96.8% and 81.2% respectively. No statistical difference in knowledge between groups was observed before or after the activity (laypersons vs. health professionals, $p_{\text{before}} = 0.26$ and $p_{\text{after}} = 0.57$).

Discussion and Conclusion: The tools used in BLS training were efficient to expand participants' knowledge, even with low cost materials and short time dedicated to CPR training. We managed to teach important concepts regarding the lay rescuer, as recommend by AHA. However, we do not know the long-term impact of this intervention. As the Surgical Mission Trip is planned to take place every year in some Brazilian city, there will be plenty of opportunities to refine our tools and teaching methods in further studies.

Keywords: Cardiac arrest; Cardiovascular diseases; Basic life Support.