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Simulation and education

Effects of BLS training on factors associated with attitude toward CPR in college students☆

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ABSTRACT

Aim: In order to elucidate the factors for willingness to perform CPR, we evaluated the responses of college students to questionnaires before and after basic life support (BLS) training.
Methods: Before and after participating in a small group BLS course, 259 students completed questionnaires. A logistic regression model was used to elucidate independent factors for their willingness to attempt resuscitation.
Results: Factors associated with willingness to perform BLS for strangers were "anxiety for a bad outcome" (odds ratio (OR) 0.08) and "having knowledge of automated external defibrillator (AED)" (OR 4.5) before training. The proportion of students showing willingness to perform BLS increased from 13% to 77% after the training even when the collapsed person is a stranger. After training, "anxiety for being sued because of a bad outcome" (OR 0.3), and "anxiety for infection" (OR 3.8) were significant factors. Those who preferred to perform BLS without ventilation increased from 40% to 79% ($p < 0.0001$).
Conclusion: The proportion of students showing willingness to perform BLS increased after the training. Significant association between "anxiety for infection" and willingness to perform BLS might indicate that those who wish to perform BLS developed their awareness of risk of infection more than the counterparts. For future guidelines for resuscitation and the instruction consensus, the reluctance of bystanders to perform CPR due to the hesitation about mouth-to-mouth ventilation should be reconsidered with other recent reports indicating the advantage of compression-only CPR.

Introduction

Out-of-hospital cardiac arrests are the catastrophic events of life, and one of the key factors to improve the outcome in out-of-hospital cardiac arrests is to promote the willingness of people to attempt cardiopulmonary resuscitation (CPR). Bystander CPR has demonstrated improved survival as well as better quality of life for those who survive out-of-hospital cardiac arrest.[1–3] Following the introduction of current CPR techniques, the impact of bystander CPR has been reinforced in the concept of the chain of survival and public access defibrillation.[4,5] On the other hand, the bystander CPR rate was reported less than 30% for the past 10 years in Japan.[6,7] In basic life support (BLS) training, we mainly focus on the knowledge and skills of initial life support care. However in real situations, the attitude of a bystander is the most important. We focused particularly on factors of willingness to perform CPR and evaluated them by questionnaires before and after BLS training for college students.

Methods

Study design and subjects

We conducted the questionnaire surveys before and after the BLS training course for college students. The students participated in it for the school credit. The BLS training course was conducted for 3 days in August 2005. The instructors were doctors, nurses, and emergency technicians and those who had experienced more than five courses were registered as instructors. The course was comprised of 390 min of lectures dealing with the basic concepts of resuscitation. Simulation training was conducted for 100 min using

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manikins and automated external defibrillator (AED) trainers. The training was carried out in small groups, in which the student to instructor ratio did not exceed 6:1. This study was approved by the institutional review board of Kyoto University Graduate School of Medicine, and response to the questionnaire was considered as their consent to the study.

Questionnaire and statistical analyses

We developed a questionnaire composed of 15 categorical and Likert-type questions regarding the knowledge of and attitude to BLS, as well as the participants' characteristics. The participants scored their degree of knowledge and attitude on a 10-level Likert-type scale.

After participation in the training course, the same questionnaires were reapplied. Likert scores were categorized into three levels: "no" (1–3 on Likert-type scale), "unsure" (4–7) and "yes" (8–10). We used a chi-square test to evaluate the effects of the knowledge on the willingness to perform BLS on a stranger. To determine the independent factors for willingness to perform BLS, we dichotomized willingness to perform BLS "yes" versus "unsure or no", as well as other factors between "yes" and "unsure or no". We, then, developed a logistic regression model, including factors of "lack of knowledge of BLS", "anxiety for a bad outcome", "anxiety for being sued because of a bad outcome", "having knowledge of AED", "anxiety for infection", "hesitation in performing mouth-to-mouth ventilation to strangers", "hesitation in performing mouth-to-mouth ventilation to family". All analyses were performed using JMP software version 5.01 (SAS Institute Inc., Cary, NC) and SAS software version 9.1 (SAS Institute Inc., Cary, NC).

Results

Two hundred and eighty-eight college students participated in a BLS training course, and 259 answered our questionnaires completely (response rate 90%). The mean age of these students was 21.0 ± 3.4 years. Of 259 students, 169 were male. The number of students majoring in healthcare was 15 (5.8%). Only half of the students responded that they would call an ambulance when they witnessed the collapse of a stranger before their BLS training. This percentage increased to 89% after the training, demonstrating that something affected the students' attitude during the training (Figure 1: Q1). The percentage of students who would perform BLS

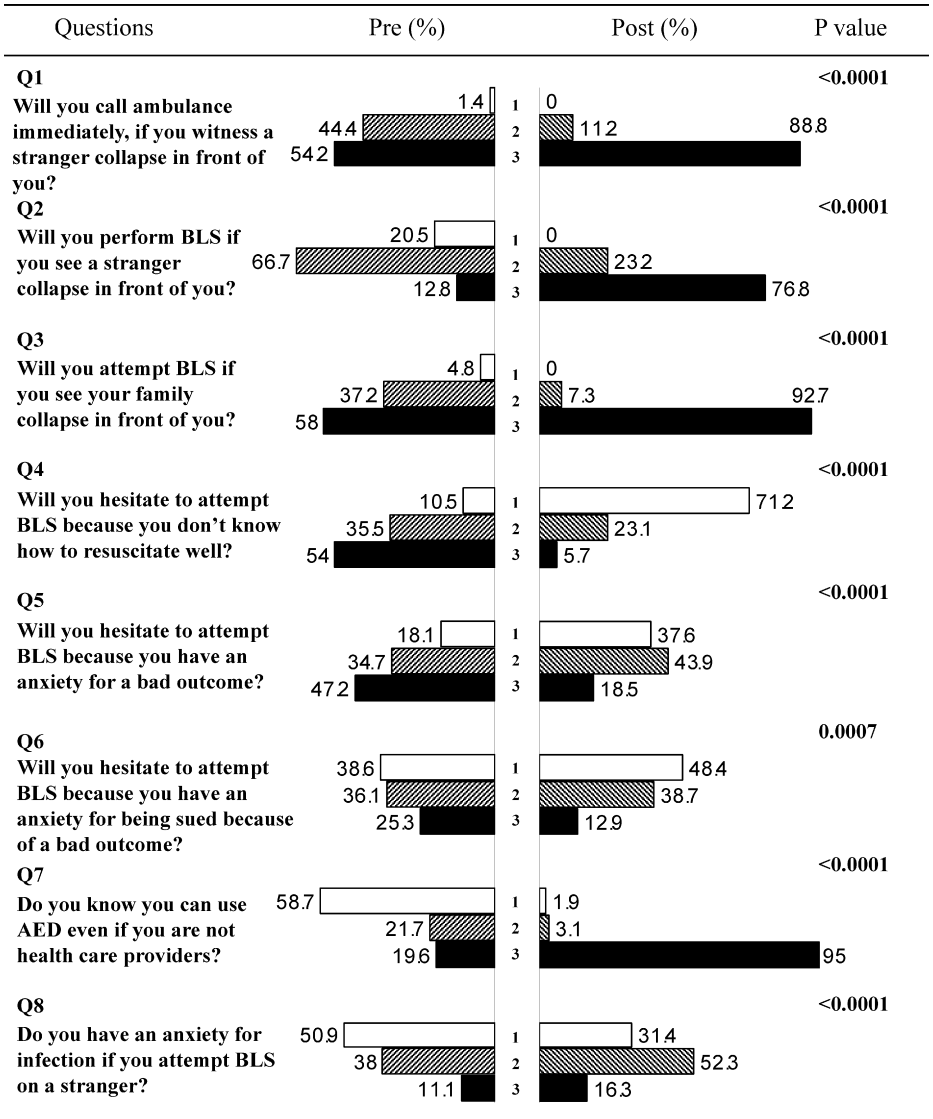

Figure 1. Students' answers comparing pre- and post-training: 1: no; 2: unsure; 3: yes. BLS: basic life support.