



Simulation and education

The effects of the new CPR guideline on attitude toward basic life support in Japan[☆]

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ABSTRACT

Background: There is no study regarding the influence of cardiopulmonary resuscitation (CPR) guideline renewal on citizen's attitude towards all basic life support (BLS) actions.

Methods and results: We conducted a questionnaire survey to new driver licence applicants who participated in the BLS course at driving schools either before (January 2007 to April 2007) or after (October 2007 to April 2008) the revision of the textbook. Upon completion of the course, participants were given a questionnaire concerning willingness to participate in CPR, early emergency call, telephone-assisted chest compression and use of an automated external defibrillator (AED). After the revision, the proportions of positive respondents to use of AED as well as to all the four scenarios significantly increased from 2331/3564 to 3693/5156 (odds ratio (OR)= 1.34) and from 1889/3443 to 3028/5126 (OR= 1.18), respectively. However, the new guideline slightly but significantly augmented the unwillingness to make an early call (236/3568 vs. 416/5283, OR= 0.83). Approximately 95% of respondents were willing to follow the telephone-assisted instruction of chest compression, while approximately 85% were eager to perform CPR on their own initiative. Multiple logistic regression analysis confirmed the results of mono-variate analysis, and identified previous CPR training, sex, rural area and student as other significant factors relating to attitude.

Conclusions: Future guidelines should emphasise the significance and benefit of early call in relation to telephone-assisted instruction of CPR or chest compression. The course instructors should be aware of the backgrounds of participants as to how this may relate to their willingness to participate.

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In a situation where basic life support (BLS) is indicated, a bystander should activate the emergency response system and initiate the 'chain of survival' promptly.¹ Early bystander cardiopulmonary resuscitation (CPR) significantly increases survival rates in out-of-hospital cardiac arrest.^{2,3} Among the four links in the 'chain of survival', the initial three links (early access, early CPR and early defibrillation) have potential effects on the survival.^{4,5}

Various attempts have been made to improve the rate of bystander CPR.^{6–9} Although not all the callers accept the assistance, telephone-assisted CPR was recommended to increase the rate of bystander CPR and survival.^{10,11} Early defibrillation is achieved by the introduction of public access to automated external defibrillator (AED).¹²

Not only citizen's attitude towards CPR and AED but also the reasons why they are reluctant to initiate CPR and use the AED have been reported.^{13–16} However, their willingness to make early emergency calls and to accept the telephone-assisted CPR remains to be studied.

Various educational courses conformed to Guidelines 2000 for CPR and cardiovascular care: international consensus on science were held, including mass CPR training events⁶ and targeted CPR training of family members of patients suffering from cardiovascular disease.⁷ In Japan, new driver licence applicants have been obligated to take the 3-h BLS training course at driving school since 1995. The course fee is 3500 yen and paid to the driving school. The number of participants is less than 10 per one instructor.

The International Consensus on Cardiopulmonary Recommendations (CoSTR)¹⁷ was announced in November 2005. The main characteristic of the new consensus is simplification of its procedures. A preferred increase in the rate of survival has been reported after the guideline renewal.¹⁸ The textbook of BLS training course at driving school was revised in July 2007 according to the changes in Japanese guidelines based on CoSTR. Since the textbook revision included the requisition of practical training for AED, more

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time was spent for practical AED education. The simplification of the BLS algorithm may reduce the unwillingness to perform BLS. However, no study regarding the influence of guideline renewal on citizen's attitude towards all BLS actions has been reported. In the present study, we studied whether the implementation of the new guideline could alter the attitudes of course participants to the BLS actions, and identified the factors that influence these attitudes.

1. Methods

The present study was approved by a committee of Ishikawa Designated Driving School Association.

1.1. Respondents and setting

Respondents were new driver licence applicants who participated in BLS training courses at 17 authorised driving schools in Ishikawa prefecture, Japan. The questionnaire was collected from all participants. Ishikawa prefecture has a population of 1.17 million residents and covers 4185 km². The prefecture is divided into central (urban) and other three rural or semi-rural regions. Approximately 60% of the population is in the central region with an area of 1432 km². All the fire departments have a dispatch system, which provides a telephone-assisted instruction of CPR (chest compression). The BLS courses are held systemically by fire departments, the Japanese Red Cross Society, high schools and the driving schools.

1.2. Questionnaires

We distributed questionnaires upon completion of the course. The questionnaires included age group of respondents, sex, residential area, occupation, experience of previous BLS training and the duration between present and the most recent BLS training courses. We asked questions regarding their willingness to perform BLS actions in four hypothetical scenarios of emergency scenes related to the initial three links in the 'chain of survival' (Table 1). Respondents were instructed to choose one of the four options if actually faced with the situation. The multiple choices included both positive and negative actions. When they selected negative actions, they were instructed to select the multiple choices for reason or to write free comments. The questionnaires were made in accordance with the guidelines for the Law Concerning the Protection of Personal Information.

Table 1
Scenarios and choices.

| Scenarios | Choices |
|--|---|
| 1. A 30-year-old woman collapsed in front of you. She has no breathing and appears to be in cardiac arrest. She has blood on her face. What do you do after calling an ambulance? | (a) Chest compression and mouth-to-mouth ventilation ^a (b) Chest compression only ^a (c) Do nothing (d) Other |
| 2. You found an unknown man collapsed on the floor. He had no response. He was abnormally breathing. When you called 119, commander assisted you to keep on pushing the center of chest. What do you do? | (a) Compress the center of chest ^a (b) Do not compress (c) Other |
| 3. One of your families complained of a sudden chest pain and became unresponsive. He or she is breathing. What do you do first? | (a) Call 119 ^a (b) Call family, friend or neighbors (c) Call his or her home doctor (d) Other |
| 4. There is a man with cardiac arrest. AED is in the neighborhood. What do you do? | (a) Use the AED ^a (b) Do not use the AED (c) No idea |

^a Choice(s) for positive attitude or willingness.

1.3. BLS course revision and study period

The study period consists of the first term of January 2007 to April 2007 before the revision of the textbook and the second term of October 2007 to April 2008 after the revision. The revision of the textbook included an immediate initiation of chest compression after two rescue breathings and a requisition of practical training for AED. A face-shielding device and the textbook were provided to all attendants at the beginning of the course. In some schools, a video instruction programme was introduced. The BLS course in the driving school is guaranteed by the Japanese Red Cross Society and the Japan Foundation for Emergency Medicine.

1.4. Statistical analysis

We analysed the data using JMP ver. 6 for Windows (SAS Institute Inc., Cary, NC, USA). Chi-square test was applied for mono-variate analyses. We used multiple regression analysis to confirm the effect of guideline renewal and to elucidate the factors relating to attitude. We considered the difference or effect to be significant when *p*-value was less than 0.05.

2. Results

2.1. Number of respondents

The total numbers of respondents were 3580 before revision of the textbook and 5310 after the revision. However, not all the respondents answered to all questions we asked. When the data were analysed, we excluded the respondents who gave no answer to a scenario or information we needed.

2.2. Comparison of backgrounds and characteristics of respondents between the two terms (Table 2)

The majority of the participants were aged between 17 and 29 years in both terms. There were significant but small differences in age, residential area and occupation between the two terms. The knowledge of how to use the AED increased from 40.3% to 50.5% after the textbook's revision. There was no significant difference in the experience of BLS training between the two terms. However, when analysed only in the respondents with experience of previous BLS training, a higher proportion of the respondents had participated in the other BLS training courses within 3 years in the pre-revision term, compared with the post-revision term.

2.3. Comparison of willingness to perform BLS actions between the two terms (Table 3)

There was no significant difference in the proportion of respondents who were willing to perform, on their own initiative CPR between pre-revision and post-revision terms. The proportions of respondents who selected the chest compression only CPR were 14.3% before the revision and 14.3% after the revision. The proportion of respondents who were willing to perform chest compression following telephone-assisted instruction was approximately 95% in both terms. The proportion of respondents taking other actions than emergency call was slightly but significantly higher in the post-revision term than in the pre-revision term. The major action that these respondents volunteered to take was calling their neighbors, friends or family doctor. After the revision, the proportions of positive respondents to the AED use and all the four scenarios increased significantly.

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