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Short Communication

Effect of basic life support training on knowledge and performance of high school students

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Abstract

Introduction: This study aimed to evaluate the impact of basic life support (BLS) on the knowledge and performance of high school students.

Methods: During a semi-experimental study, 12 068 ninth-grade high school students entered the study. The course included BLS and airway maneuvers regarding foreign body aspiration. The students' level of knowledge and performance were assessed based on a questionnaire.

Results: The students' mean levels of knowledge were 3 (3-2) and (4-5) before and after the training, respectively. Approximately 60% of the students had excellent scores on practical activities.

Conclusion: We conclude that resuscitation training can be effective in promoting public health.

Introduction

Performing cardiopulmonary resuscitation (CPR) by people at the scene is one of the most promising ways to increase the number of survivors and reduce the subsequent neurological problems.[1] The best time to save the life of a patient who has had a heart attack is the first 4 to 6 minutes, known as the golden time. After the golden time, the patients will likely experience severe brain damages.[2] If a person can do the basic life support (BLS), he could prevent brain death and save the patient's life by performing CPR during the golden time.[3] Given the need for public training on BLS, we decided to conduct a theoretical and practical BLS training among the ninth-grade high school students and evaluate its impact on the students' knowledge and performance.

Methods

In a semi-experimental study, during three months from November 2019 to January 2020, 12 068 high school students in Tabriz, Osku, and Sahand cities in East Azarbaijan province entered the study. Sampling was full census. The maximum number of students participating in each workshop was 30, and the allotted time was 2 hours. The criteria for entering the study included being a ninth-grade student in the first stage of high school, and the exclusion criteria were dissatisfaction with participating in the study and failure to complete the questionnaire.

Prior to the study, educators, including nurses and emergency medicine specialists, participated in a one-month training course in nursing and emergency medicine to coordinate the teaching methods. Teaching materials were based on the latest American Heart Association guidelines.[4] The questionnaire used to assess the level of knowledge included five questions. To determine the validity, the questions were reviewed and standardized by 5 emergency medicine specialists. To determine the reliability of the questions, a test-retest was performed on 30 students, and Cronbach's alpha 0.85 was calculated. The students' performance was assessed based on working with the BLS mannequin under coach supervision, including three skills of chest compression, airway opening (jaw thrust), and Heimlich maneuver, which were scored by a 4-point Likert scale (weak, moderate, good, and excellent).

After obtaining the informed consent of the participants in the project, first, the knowledge assessment questionnaire was completed. Then, the instructor provided theoretical training using slides, videos, and images for the first hour. In the next hour, practical training and practical skills assessment were performed along with adult and children's training mannequins. After the workshop, the same initial questionnaire was completed by the students. The data was entered into SPSS software 17.0. Data were described using descriptive statistics methods (mean, standard deviation, and frequency (percentage)). T-test was used to analyze quantitative variables. In all cases, a *P* value less than 0.05 was considered significant.

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Results

In this study, 12068 students participated. The mean age of the subjects was 14.93 ± 0.03 years. Regarding gender, 8402 (69.6%) were female, and the rest were male. In terms of training experience, 396 (3.3%) had a history of attending similar classes, and the rest had no background. The mean knowledge score of the students before the workshop was 2.54 ± 1.04, and after the workshop was 4.68 ± 0.59 (*P* value < 0.001).

Table 1 shows the effect of gender variables and the history of resuscitation training on pre- and post-test results. The table shows that gender and previous training had a statistically significant effect on the test results (*P* value < 0.001). Table 2 shows the evaluation results of practical chest compression tests, airway, and Heimlich maneuvers. This table shows that more than 60% of students have done all three skills with excellent grades.

Discussion

BLS education was introduced to school children in early 1961 in Norway.[5] School-age children are more likely to accept BLS training than older people and have the motivation to learn quickly and easily.[6] In UK, chest compression training was taught to 11-year-old children at schools as a national curriculum .[7]

Each member of the community must have excellent knowledge and performance of BLS, and the best strategy to achieve this goal begins with educating school students.[8] In Denmark, only 28% of students knew how to recognize normal breathing.[9] In other studies, there was little awareness of resuscitation among students.[10]

This study found that education has led to an increase in the students' level of awareness, and gender and training background have a significant role in this increase. Furthermore, after the workshop, most of the students have done practical skills related to BLS at excellent and good levels. However, one of the limitations of the present study was the 2-hours time limit for holding the workshops. Moreover, due to the number of classes and the limited number of teachers, a teacher was used for the practical evaluation of students.

Table 1. Effect of gender and history of training on pre and post scores

Variables	Pre-test score	*P* value	Post-test	*P* value
Gender		< 0.001		< 0.001
Male	2.36 ± 1.12		4.62 ± 0.68	
Female	2.62 ± 0.99		4.71 ± 0.54	
History of training		< 0.001		< 0.001
Yes	3.96 ± 1.01		4.77 ± 0.48	
No	2.49 ± 1.01		4.68 ± 0.59	

Table 2. Evaluation of the resuscitation skills in the participants

Skill	Score			
	Excellent	Good	Moderate	Poor
Chest compression	7387 (61.2%)	4400 (36.5%)	281 (2.3%)	0 (0%)
Airway maneuver	7237 (60%)	4449 (36.9%)	383 (3.2%)	0 (0%)
Heimlich maneuver	7026 (58.2%)	4586 (38%)	453 (3.8%)	3 (0.02%)

Conclusion

Based on the current study results, it can be concluded that the inclusion of the BLS training course in the school education course leads to an increase in the students' level of knowledge and skills. Given the importance of the subject, BLS teaching has become popular all over the world, and providing BLS training to students is recommended in order to improve the community health.

Conflict of Interest

The authors have no conflicts of interest

Ethical Approval

This study has been approved by the Ethics Committee of Tabriz University of Medical Sciences with the code IR.TBZMED.REC.1398.747.

Authors' Contribution

All authors have read and approved the manuscript. HEB and RA performed the data collection, writing, critical revision and drafting of the manuscript. MH and FR undertook the major parts of the study design and performed the statistical analysis, data analysis, and data interpretation.

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