



**Evaluation of the Effect of a Training Program
on the Knowledge, Perceptions and Practices of
Basic Life Support and First Aid among Pre-
Clinical Medical Students at
Ain Shams University**

Thesis

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بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

قالوا

سببنا انك لا تعلم لنا
إلا ما علمتنا إنك أنت
العليم العظيم

صدق الله العظيم

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List of Abbreviations

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Abb.	Full term
AED	Automated External Defibrillator
AHA	American Heart Association
BLS	Basic Life Support
CLCCS	Central Laboratory for Clinical and Communication Skills - Faculty of medicine, Ain Shams University
CPR	Cardiopulmonary Resuscitation
EMS	Emergency Medical Services
ERC	European Resuscitation Council
FA	First Aid
OHCA	Out of Hospital Cardiac Arrest
WHO	World Health Organization

Glossary

Term	Definition
Basic life support	It is a term used to describe an algorithm for management of out of hospital cardiac arrest. The algorithm includes Cardio-pulmonary resuscitation (CPR) and the use of Automated External Defibrillator (AED) to deliver an electrical shock in cases of ventricular tachy-arrythmia which are commonly implicated in cardiac arrest.
First aid	It refers to the initial, immediate, temporary care given to an injured or sick person in life threatening situations in order to maintain life, to ease pain and to prevent deterioration of the patient's condition until professional medical care is available
Heimlich maneuver	It is a technique used in the management of choking in adults. It depends on using abdominal thrusts to expel an object obstructing the airway

Evaluation of the Effect of a Training Program on the Knowledge, Perceptions and Practices of Basic Life Support and First Aid among Pre-Clinical Medical Students at Ain Shams University

Abstract

Introduction: First aid and basic life support (FA/BLS) training is essential to provide medical students with knowledge and skills. However knowledge and skills deteriorate within a few months following training. Several modalities including self-learning videos have been introduced to counter the knowledge and skill loss.

Objectives: This study aimed to measure the base line knowledge and perceptions regarding FA/BLS among pre-clinical medical students at Ain Shams University. It also aimed to determine the impact of a training course followed by monthly video messages on the acquisition and retention of knowledge, skills and self-confidence.

Methods: A baseline survey was posted online for pre-clinical medical students from 2nd to 4th grades to which 372 responded. Respondents were invited to attend a 2 day training course and 132 attended and completed the training. Those were randomized into 2 groups; one group (Study group) was provided with monthly video messages for a year following training. The other group (Control group) was not sent any messages. Students' knowledge, attitude and self-confidence were tested 3 months and 12 months post training. An adult Basic life support skill test was held 12 months after training.

Results: Baseline survey results have shown that students had inadequate FA/BLS knowledge as the mean knowledge score was 16.64 ± 3.97 out of a maximum of 32. Knowledge has improved significantly immediately after training (mean = 30.03 ± 1.59 $P < 0.001$) and 92.4% have successfully passed adult BLS practical assessment at first attempt. Knowledge has deteriorated significantly three months after training. After 12 months only 5.7% of students passed the adult BLS practical assessment. Sending monthly video messages after training did not significantly affect knowledge and skill scores. Students in the study group showed slightly better attitude and self-confidence in FA skills 3 months after training.

Conclusion: Training has proved to be effective in providing students with adequate FA/BLS knowledge and skills, but unfortunately both deteriorate as rapidly as 3 months following training. Sending monthly video messages after training is not sufficient to slow knowledge and skill decline, although they might boost attitude and self-confidence in the short term.

Key word: First aid, basic life support, Emergency Medical Services.

تقييم أثر برنامج تدريبي على المعارف والمفاهيم والممارسات الخاصة بدعم الحياة الأساسية والإسعافات الأولية بين طلاب الطب في مرحلة الدراسة قبل الإكلينيكية بجامعة عين شمس

الملخص

مقدمة: التدريب على الإسعافات الأولية ودعم الحياة الأساسي أمر ضروري لإمداد طلاب الطب بالمعرفة والمهارات في هذا المجال. ومع هذا فإن مستوى كل من المعارف والمهارات يتدهور في خلال أشهر قليلة عقب انتهاء التدريب. لقد تم تجربة العديد من الأساليب ومنها استخدام فيديو التعلم الذاتي للحيلولة دون فقدان المعارف والمهارات.

أهداف الدراسة: تهدف هذه الدراسة إلى قياس المستوى الأولي للمعرفة والمفاهيم والممارسات المتعلقة بدعم الحياة الأساسي والإسعافات الأولية بين طلاب الطب في مرحلة الدراسة قبل الإكلينيكية بجامعة عين شمس. تهدف الدراسة كذلك إلى تقييم تأثير برنامج تدريب تعليمي متبوعاً برسائل فيديو شهرية على اكتساب والاحتفاظ بالمعرفة والمهارات وثقة الطالب في أدائه.

طرق الدراسة: تم إجراء استطلاع الكتروني عبر الانترنت لطلاب الطب في مرحلة الدراسة قبل الإكلينيكية من الفرقة الثانية إلى الرابعة واستجاب له ٣٧٢ طالباً. تم دعوة الطلاب الذين شاركوا في الاستطلاع لحضور برنامج تدريبي مدته يومان وقد أنهى التدريب بنجاح ١٣٢ طالباً وطالبة. تم توزيع هؤلاء الطلاب عشوائياً على مجموعتين: المجموعة الأولى (مجموعة الدراسة) أرسلت إليهم رسائل فيديو شهرياً لمدة عام من نهاية التدريب. المجموعة الأخرى (مجموعة ضابطة) لم ترسل لهم أية رسائل. تم اختبار معرفة واتجاهات وثقة الطلاب في أدائهم بعد مرور ثلاثة أشهر وبعد عام من التدريب. كذلك تم عقد اختبار عملي لمهارات دعم الحياة الأساسي للبالغين بعد عام من التدريب.

النتائج: أظهرت نتائج الاستطلاع عدم كفاية مستوى معرفة الطلاب بالإسعافات الأولية و دعم الحياة الأساسي وقد كان متوسط مجموع درجات الطلاب 16.64 ± 3.97 من إجمالي ٣٢ درجة. وقد تحسن مستوى المعرفة بشكل ذي دلالة إحصائية بعد التدريب مباشرة (حيث كان متوسط درجات الطلاب 30.03 ± 1.59 و $P < 0.001$). وقد اجتاز ٩٤% من الطلاب اختبار مهارات دعم الحياة الأساسي للبالغين من المحاولة الأولى. تراجع مستوى المعرفة بشكل كبير بعد مرور ثلاثة أشهر على التدريب. وبعد مرور اثني عشر شهراً تمكن ٥٧% فقط من الطلاب من اجتياز اختبار المهارات دعم الحياة الأساسي للبالغين. لم يكن لإرسال رسائل فيديو بعد التدريب تأثير يذكر على درجات الطلاب في اختبار المعرفة والمهارات. غير أن الطلاب في مجموعة الدراسة بدوا أفضل قليلاً من حيث تقييم الاتجاهات و مستوى الثقة بأداء مهارات الإسعافات الأولية بعد مرور ٣ أشهر على التدريب.

الخلاصة: لقد ثبتت فائدة التدريب في منح الطلاب المعارف والمهارات المطلوبة ولكنها تراجع سريعاً بعد مرور ثلاثة أشهر على التدريب. لقد ظهر أن إرسال رسائل فيديو شهرياً بعد التدريب ليس كافياً لإبطاء تدهور مستوى المعرفة والمهارات إلا أنها قد تعمل على تعزيز الاتجاهات والثقة في الأداء في المدى القصير.

Introduction

Trauma and sudden illness -such as cardiac arrest- constitute serious emergencies that require immediate action (**Abe et al., 2009; Tannvik et al., 2012**).

First aid (FA) refers to the initial temporary care given to an injured or sick person in order to maintain life, ease pain and prevent deterioration of the condition until the arrival of professional medical care (**Karren et al., 2011; Univ.West.Australia.Guide, 2017**). Basic Life Support (BLS) is a specific term used to describe an algorithm for emergency care in cases of out-of-hospital cardiac arrest (**Chung et al., 2016**).

Bothe First aid and Basic life support have been proven to play a major role in reducing mortality in emergency situations (**Abe et al., 2009; Lloyd-Jones et al., 2010; Stiell et al., 2004; Tannvik et al., 2012**). However, training for such critical skills is reportedly poor during undergraduate medical education especially in developing countries (**Aroor et al., 2014; Businger et al., 2010; Graham and Scollon, 2002; Joseph et al., 2014; Mastoridis et al., 2011; Tipa and Bobîrnac, 2010**). Several studies in India, Jordan and Saudi Arabia have reported that hardly one third or less of medical students

had ever received any form of first aid training (**Bindu et al., 2017; Khatatbeh, 2016; Kumar et al., 2013; Raffaa et al., 2016; Sangamesh et al., 2017; Yunus et al., 2017**).

Training in First aid and Basic life support has proven to be of value in improving theoretical knowledge, skills and confidence in the ability to perform skills among medical students (**Aqel and Ahmad, 2014; Castillo et al., 2018; Frangez et al., 2017; Pande et al., 2014; Saiyad et al., 2015; Savaliya et al., 2016; Sopka et al., 2012**). However, knowledge and skills have been found to rapidly deteriorate within a few months after training (**Aqel and Ahmad, 2014; Pande et al., 2014; Partiprajak and Thongpo, 2016**). Repeated refresher training is recommended although there is no consensus on the optimal training frequency (**Christenson et al., 2007; Frcovic et al., 2008; Woollard et al., 2006**). Due to the limited resources for frequent traditional class based refresher training, alternative methods to reduce the decline of knowledge were proposed; such as online learning and reminder videos through mobile phones (**Ahn et al., 2011; Castillo et al., 2018**).

There is hardly published research about first aid and BLS training among medical students in Egypt. This study aims to measure the base line knowledge and perceptions

regarding first aid and basic life support among pre-clinical medical students at Ain Shams University. It also aims to determine the impact of a training course followed by monthly video messages –sent through e-mails and phone messages- on the acquisition and retention of knowledge, skills and self-confidence in skill performance.

Aim of the Work

Research questions

1. What is the base line level of knowledge and perceptions as regard first aid and basic life support among pre-clinical medical students at Ain Shams University
2. How would students' base line knowledge, perceptions and practices related to first aid and basic life support change in response to an educational intervention in the form of an eight hour practical training course?
3. How would reinforcement electronic educational material impact the retention of knowledge and change skills among trained students three months and one year post intervention?

Goal

- To increase the number of trained personnel capable of providing correct first aid and basic life support in emergency situations, and to promote recovery and reduce complications to decrease burden on health resources.