Retention of cognitive skills acquired in Heartsaver First Aid CPR AED course of American Heart Association (AHA), USA among non-medical students in Pune city.

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ABSTRACT

INTRODUCTION:

Anywhere, anytime, anyone can face a medical emergency!!
It could be at your workplace, public place or your home; it could be your colleague, your friend or yourself. About 70 percent of out-of-hospital cardiac arrests happen at home and workplace. Cardiopulmonary resuscitation (CPR) and Automated External Defibrillator (AED) if used appropriately and immediately can significantly impact survival of patients. The American Heart Association – Heartsaver First Aid CPR AED course is specially designed to prepare an individual to provide First Aid, CPR and use an Automated External Defibrillator (AED) in a safe timely and effective manner

OBJECTIVE:

The study aims to test the cognitive skills acquired during the AHA – Heartsaver First Aid CPR AED course at the end of four weeks.

MATERIALS AND METHODS:

The interventional study was conducted amongst 244 Post Graduate Management students based in Pune. The students were of the age group 20 – 27. In order to assess the impact of the AHA - Heartsaver First Aid CPR AED training, the students chosen, had not undergone any previous, formal training in First Aid and CPR concepts. The respondents were assessed with a pre-designed 15 item Multiple Choice Questionnaire provided by the American Heart Association (AHA). The respondents were then subjected to a one day training on correct First Aid practices called AHA – Heartsaver CPR AED protocol. After the training session the respondents were subjected to the same questionnaire provided by AHA to evaluate their immediate post training knowledge. To assess the knowledge retention of acquired cognitive skills among respondents, the same questionnaire was administered to the respondents after a gap of four weeks. Data was analyzed using means and paired ‘t’. test to ascertain significance. SPSS version 23.0 was utilized for analysis.

DISCUSSION:

The low pre-test scores clearly indicate the lack of knowledge regarding Heartsaver First Aid CPR AED among non-medical students. The significant increase obtained in the immediate post training test points towards effectiveness of communication regarding safe and timely first aid and CPR practices. The retention test scores show a significant drop from the immediate post training test scores.

CONCLUSION:

The program although successfully transfers knowledge but requires periodic reinforcement to ensure long term retention and application in a real world emergency.

A key reason behind the drop in scores could be the lack of exposure to medical emergencies as it does not feature in their management curriculum. Regular refresher workshops can ensure their continued interest and retention of the cognitive skills.

KEYWORDS: Cardio-Pulmonary Resuscitation, Automated External Defibrillators.

INTRODUCTION:

Anywhere, anytime, anyone can face a medical emergency!!
It could be at your workplace, public place or your home; It could be your colleague, your friend or yourself!!

If you have faced such an emergency, you will realize how important it is to know what exactly to do in the first crucial moments before a doctor or an ambulance arrives. Statistics prove that anywhere, in the world, even with the best of emergency medical services available, it takes a minimum of 10 minutes before the arrival of expert medical care. A sound knowledge of First Aid therefore is a must. It can make all the difference: *it can save lives!*

About 70 percent of out-of-hospital cardiac arrests happen at home and workplace. And in most of the cases death occurs before the victim can get any medical treatment.[1] Cardiopulmonary resuscitation (CPR) and Automated External Defibrillator (AED) if used appropriately and immediately can significantly impact survival of patients.[2] The awareness of emergency medical services amongst medical students in India remains low.[3] It has been shown that even the first aid knowledge amongst undergraduate students is poor[4]. Thus it is expected that most people not hailing from medical background do not possess formal training in First Aid CPR & AED usage. Very less studies have been conducted to assess the knowledge of Heartsaver First Aid CPR AED amongst non-medical students.

The American Heart Association – Heartsaver First Aid CPR AED course is specially designed for anyone with little or no medical training. The course is designed to prepare an individual to provide First Aid, CPR and use an Automated External Defibrillator (AED) in a safe timely and effective manner. The course is Instructor led, video based and includes Hands on training.

Cognitive skills are human skills of information processing. It includes knowledge gained and understood because of thinking, experience and attention. The students undergoing the AHA – Heartsaver First Aid CPR AED course are expected to retain the knowledge gained for application in the future. The challenge with retention of acquired knowledge on medical emergencies among non- medical students is that, retention of the concepts are not refreshed after the one day course.

Studies have found that retention of Heartsaver First Aid CPR AED skills in undergraduate medical students is low.[5]

OBJECTIVE:

The study aims to test the cognitive skills acquired during the AHA – Heartsaver First Aid CPR AED course at the end of four weeks.

METHODOLOGY:

This interventional study was conducted amongst 244 Post Graduate Management students based in Pune. The students were of the age group 20 – 27. In order to assess the impact of the AHA - Heartsaver First Aid CPR AED training, the students chosen, had not undergone any previous, formal training in First Aid and CPR concepts. The respondents were assessed with a pre-designed 15 item Multiple Choice Questionnaire provided by the American Heart Association (AHA). The questions dealt with management of common first aid emergencies including trauma, bleeding, CPR in both adult and children and application of Automated External Defibrillator (AED). Also the knowledge regarding, approach towards patient was assessed. The respondents were then subjected to a one day training on correct First Aid practices called AHA – Heartsaver CPR AED protocol. The training session lasted for 8 hours.

The sessions were conducted by AHA – certified instructors. The tools used in training included video based sessions and hands on training on low fidelity manikins. Four such sessions were conducted to cover 244 students in batches of approximately 60 students each. After the training session the respondents were subjected to the same questionnaire provided by AHA to evaluate their immediate post training knowledge. To assess the knowledge retention of acquired cognitive skills among respondents, the same questionnaire was administered to the respondents after a gap of four weeks. Data was analyzed using means and paired 't'. test to ascertain significance.

SPSS version 23.0 was utilized for analysis.

RESULT:

Table 1: shows the mean and standard deviation of the pre-test, immediate posttest and knowledge retention after four weeks.

Paired Samples Statistics	Mean	Std. Deviation
Pre Test Score	5.99	1.93
Post Test Score	12.36	1.62
Knowledge Retention Score	10.25	2.58

The mean pretest score was 5.99±1.93 while the students showed significant improvement in the post training test scoring an average of 12.36±1.62. However, the average score obtained in the retention test conducted four weeks later developed to 10.25±2.58. This clearly indicates decline in the retention of skills as compared to immediate posttest.

Table 2: shows the statistical analysis between the paired samples with 95% confidence intervals ($p<0.05$).

Paired Samples Test	t	p-value
Pre Test Score - Post Test Score	38.93	0.00
Post Test Score - Knowledge Retention Score	12.76	0.00

Table 2 represents the results of paired t-test between paired samples (pre & post –test) which is found (38.93) with 95% level of significance ($p<0.05$) hence, may conclude that the training on Heartsaver First Aid CPR and AED skills is found significant. As well as paired sample (post- test and knowledge retention) is found (12.76) with 95% level of significance ($p<0.005$), hence may conclude that knowledge retention regarding Heartsaver First Aid CPR and AED skills after four weeks is still significant.

DISCUSSION:

The low pre-test scores clearly indicate the lack of knowledge regarding Heartsaver First Aid CPR AED among non-medical students. The significant increase obtained in the immediate post training test points towards effectiveness of communication regarding safe and timely first aid and CPR practices. However the program can be truly effective if the cognitive skills taught are retained by the students. It is expected that the students might apply the knowledge gained anytime in future. The retention test scores show a drop from the immediate post training test scores. This result raises alarm on the long term retention and usability of Heartsaver First Aid CPR AED skills acquired in the program.

CONCLUSIONS:

The program although successfully transfers knowledge but requires periodic reinforcement to ensure long term retention and application in emergency.

A key reason behind the drop in scores could be the lack of exposure to medical emergencies as it does not feature in their management curriculum. Regular refresher workshops can ensure their continued interest and retention of the cognitive skills.

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