



Content

- **Status** The public has a poor grasp of CPR, the implementation rate of CPR by bystanders is low.

- **Purpose** To improve the implementation rate of public CPR for OHCA.

- **Method** Adopt a multidisciplinary approach to provide solutions.

Public CPR Improving Survival Rates For Out-Of-Hospital Cardiac Arrest

Yuqi Qian (s2027339/2)

Definition Of Cardiopulmonary Resuscitation (CPR)

CPR is a first aid measure implemented for cardiac and respiratory arrest, maintaining brain function through artificial respiration until natural respiration and blood circulation recover. If the patient does not get timely and correct resuscitation, after 4-6 minutes will cause irreversible damage to the patient's brain and other important organs of the human body.(1) CPR is a very important link in the chain of survival, Therefore, the popularization of CPR among the public can greatly increase the success rate of rescue patients with cardiac and respiratory arrest.

Definition Of Object

The public (non-professional bystanders) is the main object of this report. The American Heart Association cardiopulmonary resuscitation guidelines put forward the concept of "chain of survival", which relatively improved the survival rate of patients.(1)



This strategy consists of the following five key links: early recognition of cardiac arrest and activation of the emergency response system; immediate high-quality CPR; rapid defibrillation; basic and advanced life support; care after cardiac arrest.(1) At present, the research on resuscitation from cardiac arrest has been confirmed, and the most important parts of the survival chain are the identification of cardiac arrest and the initiation of CPR, and these two links are often performed mainly by non-professional bystanders. Therefore, the public plays an important role in the resuscitation of out-of-hospital cardiac arrest patients.

Background

The out-of-hospital cardiac arrest (OHCA) is a substantial public health problem. It is difficult for former professional first responders to ensure that they arrive at the scene in a short time. Therefore, the public has become the main body of on-site rescue in out-of-hospital first aid. Cardiac arrests occur suddenly and the patients are not usually able to call for assistance on their own. 4-6 minutes after a cardiac arrest brain damage starts to take place; therefore, a quick first aid action by a immediate bystander is essential. With each minute of delay in defibrillation the survival rate can decrease by 7%-10%, however, this can be reduced by 2.5%-5% per minute if the CPR is performed. In cases where a immediate bystander performs a CPR, the survival rate can be 2-3 times higher.(2)

Data from previous studies suggest that more than 3 million sudden cardiac deaths occur worldwide every year, the survival rate of OHCA is lower than 8%.(1) Unfortunately, the survival rate of OHCA patients in Asian countries is still far lower than that in European and American countries.

Current Issues

At the scene of the incident, a high proportion of people choose to assist in first aid, call for help from the surrounding people, dial an emergency number, or send them directly to the hospital, while only 16.39% of them actively carry out first aid on the spot.(2) We found that one of the reasons why the survival rate of OHCA patients in Asia is so low is that execution rate of bystanders' CPR is very low, there are two main reasons for the above phenomenon.



Public's ability to rescue is not good and can not save

- The public lacks professional CPR knowledge and training, they dare not rescue patients.
- The public has relatively narrow access to knowledge about CPR, the main way is through TV shows and newspapers and magazines.
- Lack of public assistance facilities for resuscitation.

Public's willingness to rescue is not strong and dare not save

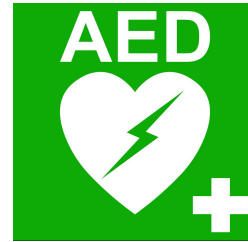
- Bringing bad consequences to individuals, worrying about affecting personal health, worrying about endangering their own safety (Such as the risk of the spread of the COVID-19).
- The public is afraid of the victim's secondary damage due to their own incorrect CPR operations, and they need to bear legal responsibility.
- Due to differences in religion and personal beliefs, some people are unwilling to perform mouth-to-mouth resuscitation.

Recommended Actions

To improve the implementation rate of public CPR for OHCA, it is necessary to adopt a multidisciplinary approach to provide solutions from the following six aspects.

■ Government departments establish first aid training bases and increase public first aid facilities

Government departments should create demonstration bases for first aid training in communities and public places, conduct individualized first aid training according to different ages and positions, and provide the public with free CPR training. In the CPR training course setting, real scenarios should be shown to the public, including providing real pictures and videos, and real first aid cases, which can be carried out by means of scenario simulation.



Government departments should increase the number of automatic external defibrillators (AED) installed in public places, equipped with AEDs in places with a high incidence of cardiac arrests, such as stadiums, subway stations, etc. (3)

At the same time, the government has launched training activities on the use of AED skills to broaden the ways for citizens to correctly master cardiopulmonary resuscitation knowledge and skills.

The more the public participates in first aid training courses, the more frequent the training, and the higher their willingness to rescue when faced with real first aid situations.

■ Education department strengthens the teaching of first aid knowledge

CPR is the core of public first aid training courses, the school education is the best way to popularize the public's CPR. Educational departments should pay attention to the education of first aid skills, for example, making CPR training a compulsory course in high school courses.(3) First aid education has been introduced since the student period to improve the public's awareness and ability of first aid.

■ Health sector implements the medical priority dispatch system

The medical priority dispatch system (MPDS) is an expert system for on-site assessment, telephone guidance and graded medical treatment in emergency dispatch system.

The MPDS executor can change the role of the caller from "waiting for rescue" to "participating in rescue" during the emergency period before the ambulance arrives at the scene. By instructing the caller to evaluate the patient's condition and implement early CPR. This telephone-guided CPR training model can enable witnesses to effectively rescue patients at the scene of the incident.

■ The law protects the rights and interests of voluntary rescuers

Legal provisions should be improved to protect bystanders who provide assistance. The public shall not bear legal responsibility for the damage caused by the voluntary implementation of emergency rescue. By exempting voluntary rescuers from their responsibilities, they can relieve their worries and encourage bystanders to help the injured, thereby promoting the public's willingness to implement CPR.

■ News media strengthen the promotion of CPR

Newspapers, publications, television, Internet, radio and other mass media must pay attention to the promotion and popularization of knowledge about CPR. At the same time, publish in the news media the stories of those who performed CPR for OHCA, and give them moral appreciation.

■ CPR operation mode update

The traditional CPR includes both chest compressions and perform mouth-to-mouth resuscitations, while the latest CPR can only perform chest compressions.

Studies have shown that, regardless of whether artificial respiration is performed, as long as chest compressions are used, the success rate of sudden death can be doubled, while cardiopulmonary resuscitation with artificial respiration only slightly increases the survival rate.(3) Moreover, it is easier for bystanders to perform chest compressions only.



Therefore, it is recommended that untrained bystanders only need to perform chest compressions.

References

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