

Comprehensive Analysis, Discussion and Suggestion on the Current Situation of Cardiopulmonary Resuscitation and Automatic External Defibrillator in General Public in China

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ABSTRACT

The number of sudden cardiac death (SCD) has increased year by year, which has become one of the main causes of death in China. Timely cardiopulmonary resuscitation (CPR) and timely and accurate use of automatic external defibrillator (AED) can greatly improve the survival rate of patients with sudden cardiac death. Because the large probability of sudden cardiac death occurs outside the hospital, it is very important for the general public to master first aid skills. This paper will mine all kinds of data from multi-dimensional and multi-angle, analyze the mastery of public first aid skills in China, and provide practical suggestions and ideas for popularizing first aid skills in the future.

1. Background

Cardiac sudden death refers to sudden death caused by various abnormal conditions of the heart. The clinical symptoms are cardiac arrest and other manifestations^[1]. In 2020, the American Heart Association proposed that cardiopulmonary resuscitation and automatic extracorporeal defibrillator should be placed in the survival chain of cardiac arrest. After cardiac arrest, the survival rate closely related to the timeliness and effectiveness of emergency response^[2]. The survival rate min 7%-10% per delay^[3]. However, many cardiac arrest occurs outside the hospital, and it is difficult for professional emergency personnel to arrive at the scene in time to carry out rescue^[4]. There-

fore, it is very important for the general public to master the use of cardiopulmonary resuscitation and automatic external defibrillator.

According to statistics, 544000 people die of sudden cardiac death every year in China. With the development of historical process^[5], China is gradually stepping into the of aging society^[6]. At the same time, the number of sudden cardiac death may increase gradually due to the influence of various reasons, such as the general increase of life pressure of cardiovascular diseases^[7]. Therefore, it is urgent to understand the public's grasp of CPR and AED and to popularize it. The purpose of this paper is to systematically summarize and analyze the current situation of cardiopulmonary resuscitation and automatic external

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defibrillator in China, so as to provide reference for later related research, first aid knowledge popularization and policy formulation.

2. Availability

Through the summary and analysis of the survey data from all over China, it is found that Guo Panfeng and others have mastered the knowledge and skills of public first aid (the use of CPR and AED, the same below) in a park in Huaian City. The average score was 21.7(100),16.5 and 7.4^[8].

According to the survey results in Chengde City, the people are still unfamiliar with the knowledge and operation of first aid. At the same time, only 7.88% of the people in the face of cardiac arrest have confidence in the implementation of cardiopulmonary resuscitation^[9]. According to the investigation of a university in Wuhan with high knowledge level, only 25.9% of the students understand the cardiopulmonary resuscitation process^[10]. According to the sample survey results of Jiang Yan and others on a street in Shenyang Public Peace Zone, even medical workers still do not fully popularize the relevant knowledge used by AED, and there are certain knowledge defects^[11].

The overall grasp of CPR and AED use in China is not very optimistic, the master rate of cardiopulmonary resuscitation in more developed areas is about 4, and that in less developed areas is less than 1%^[12]. Compared with these indicators abroad, it is found that the popularization rate of basic first aid technology of ordinary people in advanced countries abroad can reach 90^[13], and the difference between the two is great. On the aspect of sudden cardiac death outside hospital, according to some domestic statistics, the survival rate of out-of-hospital SCD in China is less than 1 and that of foreign advanced countries can reach 10-30^[14]. This also reflects the gap between the public's knowledge of first aid and the use of CPR and AED.

3. Analysis, Discussion and Recommendations

China is affected by many factors, such as history, geography, policy and so on, and the development situation of different regions is different. However, from the above survey results, the public's knowledge of first aid theory and the mastery of first aid skills are not satisfactory. Although the rate of cardiopulmonary resuscitation in more developed areas of China is higher than that in less developed areas, it is necessary to continue to strengthen the popularization of public first aid skills in order to reach the advanced level abroad. In accordance with the existing

national conditions of our country, we should first carry out cardiopulmonary resuscitation and automatic external defibrillator training for staff in crowded places such as stations, shopping malls, communities and schools, so as to maximize the benefits of training. The next step is to spread out and popularize first aid knowledge for all the public. In addition, it is necessary to make good use of social media, short video platforms and other popular ways to promote and explain, but also to explore a new mode of first aid on the Internet, that is, to learn the theoretical knowledge and operational methods of first aid skills on the Internet, and to open related venues to allow the public to conduct on-the-spot operation exercises by way of appointment, which is in line with the characteristics of the current professional first aid knowledge popularization, the large number of Internet users and the fragmentation of public time. In addition, the first aid knowledge popularization activities for college students should also be paid attention to. College students have little pressure of life, rich spare time and high physical condition, which is suitable for learning and mastering relevant first aid knowledge. According to the outline of the National Medium- and Long-term Education Reform and Development Plan (2010-2020) promulgated and implemented by the State Council, the total scale of higher education in 2020 will reach 35.5 million people^[15]. According to the plan, college students will soon become the main force of various industries in our country. The college students who have received first aid knowledge training have entered different jobs to play the role of pre-hospital first aid, thus avoiding the uneven distribution of trained personnel. Moreover, a survey of a university in Xi'an shows that more than 99% of college students think they should master CPR skills, of which 92.30% are willing to participate in training^[16]. Therefore, the popularization of first aid knowledge for college students has the advantages of strong feasibility, high enthusiasm of the audience, good effect and wide coverage.

To increase public use of CPR and AED, AED delivery should also be increased. Because AED are expensive, the average family can't afford it, besides social donation, it mainly depends on government^[17]. Based on available data, On average, per 100,000 people, The United States has 700 AED^[18-19], Japan has 276^[18,20], Singapore 35^[21]. And in some of our big cities with statistics, For every 100,000 people, Shenzhen 17.5, Haikou 13^[22], Shanghai Pudong 11, Hangzhou 5^[17]. As you can see, China's current AED delivery is relatively inadequate, the gap with developed countries is large. Government should continue to increase AED delivery, but we should also make a reasonable plan of the location before the launch, avoid the

of unreasonable distribution in some areas. Besides relying on the government, all residents of the district or street purchase and install, is also a viable option, this requires the organization and guidance of community and property managers, and the cooperation of local residents.

4. Conclusion

By the end of this year, China will build a well-off society in an all-round way, and the popularization of first aid knowledge should be accompanied by economic development. Synthesizing the existing data, the mastery of CPR and AED use in China still needs to be improved. According to the actual situation, the next step should be to popularize the knowledge of first aid to the public, especially the college students, and at the same time, we should take reasonable measures to increase the quantity of AED delivery to ensure the smooth progress of first aid.

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