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Simulation and education

Cardiopulmonary resuscitation in real life: The most frequent fears of lay rescuers ☆

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Abstract

Introduction

Surviving cardiac arrest depends on early cardiopulmonary resuscitation (CPR). Only one third of cardiac arrest victims receive prompt CPR in spite of well-attended Basic Life Support (BLS) courses. Our study aimed to investigate that how many lay rescuers, capable of performing CPR, would do so, and to analyse their impeding fears.

Materials and methods

After each BLS course for lay rescuers (American Heart Association (AHA) CPR for family and friends), an anonymous questionnaire was distributed asking participants whether they would perform CPR on an adult or on a child in a real case of cardiac arrest. In the case of a negative response, we questioned them why.

Results

A total of 1000 questionnaires were analysed. The sample group was predominantly made up of males (77.7%), Italians (82.2%), individuals aged between 26 and 35 years (41.2%) and individuals possessing a high-school diploma (61.8%). The percentages that would perform CPR on an unknown adult or child were different (86.2% vs. 73.9% $p=0.005$). The prevalent fears were regarding infection, being incapable, legal implications and causing damage and fear in general. The first three differ significantly in adult and paediatric cases. Subdividing the population according to sex, age and education did not demonstrate significant differences regarding willingness to perform adult or paediatric CPR.

Conclusions

This descriptive study demonstrates that the percentage that would really perform CPR is too low, particularly in the case of a child. Part of the course should be dedicated to discussing these arguments to ensure that all those capable of performing good CPR would immediately do so.



Keywords

Cardiac arrest; Cardiopulmonary resuscitation; Fears

It is estimated that one person every nine minutes worldwide die suddenly. In the USA, about 225000 people die unexpectedly every year,¹ and between 370000 and 750000 cardiac arrests occur. Death due to sudden cardiac arrest affects the whole population.² Although the incidence of death due to sudden cardiac arrest is relatively greater among heart patients, on the whole, the highest number of sudden deaths nonetheless occurs in the general population. The mortality out-of-hospital cardiac arrests is variable and inauspicious and stems greatly from the absence of bystanders and prompt cardiopulmonary resuscitation (CPR) or defibrillation. It was due to this that the concept of chain of survival came into being during the 1990s. It was recognised that the survival of cardiac arrest victims depends on a series of events, that together, form a chain of survival.³

Both prompt CPR and prompt defibrillation are able to positively influence the prognosis. There are studies that demonstrate how CPR constitutes a central element in the treatment of cardiac arrest. CPR, through its favourable haemodynamic effects, sustains circulation, creates a coronary flow and thus weighs on the electrophysiological properties of ventricular defibrillation making it more susceptible to electric defibrillation.^{4, 5} Independently of the waveform used for defibrillation, when CPR is not administered the prognosis is much more serious.⁶ CPR is therefore central in the basic or advanced treatment of cardiac arrest. It is for this reason that, every year, all over the world, basic life support (BLS) courses are held to spread the knowledge of CPR at a grass-root level. It would be expected, therefore, that an ever-increasing number of people throughout the world are able to administer good CPR whenever needed. However, this is not the case. Analysis of the literature has led us to realise that only a minority of cardiac arrest victims receive prompt CPR, even if the cardiac arrests are witnessed by bystanders.^{7, 8, 9, 10} It is estimated that a little over one third of cardiac arrest victims receive prompt CPR.^{11, 12} This problem does not only concern the adult sufferers of cardiac arrest but also paediatric patients.¹³ It is not therefore sufficient to know how to do CPR to perform it. Evidently, the people concerned, although trained, are impeded in their performance of CPR on a complete stranger. To clarify this aspect, studies were carried out to investigate the impact of various fears on the administration of CPR. The main fears relate to contracting infectious disease during mouth-to-mouth resuscitation,^{14, 15, 16, 17, 18} of being unable to perform a good-quality CPR,¹⁹ of becoming ensnared in legal actions²⁰ or more simply just panic.²¹ There is a shortfall of studies regarding the reservations about performing CPR on a paediatric patient. The aim of our study therefore was two-fold. First, we wanted to quantify the percentage of people who, having completed a BLS course, would really perform CPR on an unknown adult or child. Second, we wanted to evaluate the main fears, which limit the performing of CPR in the case of either an adult patient or a paediatric one.

1. Materials and methods

At the end of each BLS course (American Heart Association (AHA) 'CPR for Family and Friends' course: single rescuer CPR with mouth-to-mouth ventilation) held at the APT firefighting and AHA training centre (Bornasco, Pavia, Italy), we distributed a strictly anonymous questionnaire in Italian and English to all the participants. Participants were lay rescuers such as firefighters, flight attendants and people from the community, who

decided to learn CPR for job-related motivations or simply to learn how to save a life. We decided to exclude health-care providers. The questionnaire was designed to measure the willingness of the course participant to perform CPR on an adult patient or on a paediatric one. We also wanted to investigate their motivations by offering a range of possible motivations previously reported, and leaving space to add more specific fears. All the questionnaires were collected and the data were entered into a database (Microsoft Excel 2003). An analysis was then carried out both on the sample group as a whole, and on subgroups obtained by dividing the sample on the basis of sex, age, level of education and according to previous real and direct experience of performing CPR. The statistic test used in this descriptive study was the χ^2 test to compare percentages defining statistically significant values of $p < 0.005$.

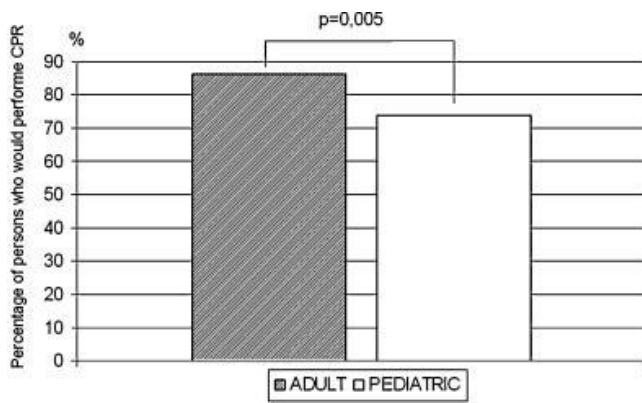
2. Results

From January 2008 to February 2009, we administered 1000 anonymous questionnaires. The general population sample group was made up mainly by males (77.7%) of Italian nationality (82.2%) between the ages of 26 and 35 years (41.2%) holding a high-school diploma (61.8%). One-tenth (10.3%) had already performed CPR on a cardiac arrest victim ([Table 1](#)).

Table 1. Characteristics of the sample group.

	<i>n</i>	%
Male	777	77.7
Female	223	22.3
Italian	822	82.2
Age: 18–25	208	20.8
Age: 26–35	412	41.2
Age: 36–40	102	10.2
Age > 40	278	27.8
Elementary school	8	0.8
Middle school	118	11.8
High school	618	61.8
University	256	25.6
CPR past	103	10.3

From the analysis of the general population sample group, a statistically significant difference emerged regarding the percentage of people who would practice CPR on an adult patient in comparison with that of a paediatric patient (86.2% vs. 73.9% $p = 0.005$) ([Fig. 1](#)).



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Fig. 1. This represents the percentage of people who, at the end of a BLS course, would perform CPR on an adult or pediatric patient in real life.

After subdividing the general population sample into subgroups according to age, sex, level of education and whether they have performed CPR on a real patient in the past, it was noted that none of these variables taken singly affected, in a statistically significant way, the willingness to perform CPR either in the case of an adult victim or in the case of a paediatric one. However, in the case of nationality, the Italians seem to be more afraid to perform CPR on an adult than on a child (Table 2).

Table 2. Relationship between the various sub-groups and the willingness to perform CPR on adult and pediatric patients.

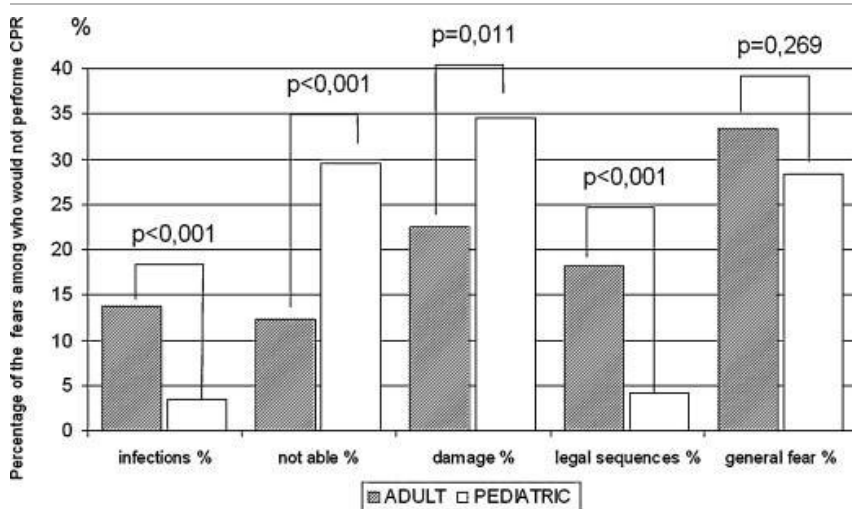
	BLS Yes%	BLS No%		PBLS Yes%	PBLS No%	
Male (777)	86.6	13.4		74.3	25.7	
Female (223)	84.8	15.2	$p=0.6045055$	72.6	27.4	$p=0.7172645$
CPR past Yes (103)	92.2	7.8		78.6	21.4	
CPR past No (897)	85.5	14.5	$p=0.0560589$	73.4	26.6	$p=0.2319047$
Italian Yes (822)	84.5	15.5		73.6	26.4	
Italian No (178)	93.8	6.2	$p=0.0001181$	75.3	24.7	$p=0.6969568$
Age1: 18–25 (208)	84.6	15.4	$p_{1-2}=0.6009682$	69.2	30.8	$p_{1-2}=0.6773557$
Age2: 26–35 (412)	86.4	13.6	$p_{2-3}=0.3653338$	71.1	28.9	$p_{2-3}=0.0084313$
Age3: 36–40 (102)	89.2	10.8	$p_{3-4}=0.3501824$	81.4	18.6	$p_{3-4}=0.5255659$
Age4>40 (278)	86.0	14.0	$p_{1-4}=0.696233$	78.8	21.2	$p_{1-4}=0.0195601$
Lower education	84.9	15.1		72.2	27.8	
Higher education	86.4	13.6	$p=0.6695085$	74.1	25.9	$p=0.6610801$

Moving on to an analysis of the various individual fears, it was observed that they were distributed differently according to whether it was an adult or a child being resuscitated. In the case of adult resuscitation, the main fear is generic, followed in order of importance by the fear of causing damage, of being caught up in legal implications, of contracting infectious diseases and lastly of not being able to resuscitate.

In the case of paediatric resuscitation, the predominant fear is that of causing damage, followed in order of importance by fear of being unable, general fear, fear of being caught up in legal implications and, finally, fear of contracting infectious diseases.

We then wished to investigate, whether or not within the sphere of the individual fears, there was a statistically significant difference between adult resuscitation and paediatric resuscitation.

Statistically significant differences were demonstrated regarding fear of contracting infectious diseases (13.8% for adult resuscitation vs. 3.4% for paediatric resuscitation; $p < 0.001$), fear of being unable (12.3% for adult resuscitation vs. 29.5% for paediatric resuscitation; $p < 0.001$) and fear of being caught up in legal actions (18.1% for adult resuscitation vs. 4.2% for paediatric resuscitation; $p < 0.001$) (Fig. 2).



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Fig. 2. This represents the principal fears among the general population who would not perform CPR on either an adult or a paediatric patient. You note a statistically significant difference regarding the fear of causing damage, of contracting infectious diseases, of being unable, and of being caught up in legal actions.

3. Discussion

The first result that merits discussion is the low percentage of people, who would practice CPR on an adult without fear. In contrast to other studies, our study investigated this aspect with regard to paediatric resuscitation demonstrating that the percentage of people willing to perform resuscitation on a child is even lower than that for adults. These results assume even more significance when taken into consideration that they refer to people who have just finished the basic course in resuscitation and therefore should feel confident and secure about the new technique that has been recently acquired. It could be envisaged that this percentage is destined to decrease after months or even years have passed after the end of the course, which explains at least in part the low percentage of prompt CPR, even in the case of a witnessed cardiac arrest.

The fact that no significant difference was demonstrated in the various subgroups with regard to willingness to perform CPR can be supported by the fact that fear is a universal sentiment that the whole population experiences independent of age, sex, level of education or prior experience in performing CPR in real life.

The second point meriting discussion is that the most frequent fears are fortunately easily overcome. With regard to the fear of infection, students should be reminded that the risk is low, above all when using the barrier systems or through the 'hands only CPR'. With regard to fear of being unable, the importance of practicing regularly to maintain a good level of training should be stressed, always remembering, however, that a less-than-perfect CPR is certainly better than no CPR at all.[22](#), [23](#)

Comparing three groups of patients, it was clearly demonstrated that the prognosis is worse for patients who do not receive CPR, better for patients who receive a correct and prompt CPR and somewhere in between for patients who receive low-quality CPR.

4. Conclusions

Prompt and good-quality CPR is fundamental for the survival of cardiac arrest victims, either for an adult victim or for a paediatric one. The percentage of people who know CPR is increasing but the number of cardiac arrest victims that receives a prompt CPR remains low. One of the reasons is probably that even if proficient in performing CPR, many people are too afraid to put it into practice. This element is very important because it is a reversible one. We think it would be important to discuss this topic at the end of the course to reassure the participants that there are no reasons to be afraid in order that the highest possible number of participants finish the course without fear and are ready to perform correct CPR both on adult and paediatric patients.

Conflict of interest statement

None to declare.

Appendix A. Supplementary data

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Citation Excerpt :

...Despite the increase in access to training for lay people, there is still an unwillingness of some to perform CPR. The reasons identified for this include fear of infection, fear of getting it wrong, and fear of legal implications.¹³ Training of family members of high risk patients can reduce anxiety of those family members and the patient, improve emotional adjustment, and empower individuals to feel that they would be able to start CPR...

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