



## Willingness to Perform Chest Compression Only in Witnessed Cardiac Arrest Victims versus Cardiopulmonary Resuscitation in Iran

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### ABSTRACT

**Background:** Performing immediate bystander Cardio Pulmonary Resuscitation (CPR) is the most important factor that determines survival from cardiac arrest. Recommended mouth to mouth ventilation maneuver during CPR has led to lower rate of CPR performance in the population.

**Objectives:** The present survey aimed to evaluate the willingness of nurses at Shiraz University of Medical Sciences for performing CPR versus chest-compression-only CPR.

**Patients and Methods:** During a CPR course, we performed a survey on 25 nurses from Shiraz University of Medical Sciences, Iran. This survey included age and gender of the participants. In the first question, they were asked about their willingness to perform CPR with mouth to mouth breathing for witnessed cardiac arrest victims. In the second question, they were asked about their willingness to perform chest compression only for cardiac arrest victims.

**Results:** Among the participating nurses, 96% were female with a mean age of 31 years. Only 40% were willing to perform CPR that requires mouth to mouth ventilation. On the other hand, 92% were willing to perform chest compression only without mouth to mouth ventilation. The mean age of the nurses who would do CPR was lower compared to those who would not.

**Conclusions:** In this survey, we demonstrated that eliminating mouth to mouth ventilation maneuver could lead to markedly higher willingness to perform CPR for witnessed cardiac arrest victims in CPR trained nursing personnel. Our study is in agreement with other studies advocating that chest-compression-only CPR could lead to higher bystander resuscitation efforts.

#### ► Implication for health policy/practice/research/medical education:

Eliminating mouth to mouth ventilation maneuver could lead to markedly higher willingness to perform CPR for witnessed cardiac arrest victims in CPR trained nursing personnel. Chest-compression-only CPR could lead to higher bystander resuscitation efforts.

### 1. Background

Traditionally, cardiopulmonary resuscitation is defined as chest compression and ventilation (1). Research on emergency care of patients with cardiac arrest has led us to conclude that some components of the cardiopulmonary resuscitation guidelines, first established in 1966 and reaffirmed in 2000 and 2005, are seriously flawed (2) due to the fact that they recommend the same approach of cardiopulmonary resuscitation for two entirely different

clinical conditions: primary cardiac arrest where the arterial blood is well oxygenated at the time of the cardiac arrest and respiratory arrest when the arterial blood is so severely desaturated that contributes to hypotension and secondary cardiac arrest (1). Analysis of human data from a national out-of-hospital CPR registry documented no survival advantage to ventilations plus compressions compared to the provision of Chest-Compression-alone Resuscitation (CCR) during bystander resuscitation. On the other hand, it is now well recognized that one of the key determinants of improved outcomes from cardiac arrest is early institution of effective CPR (3). It has been reported that the survival

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rate following out of hospital resuscitation has improved by 30 – 40% by decreasing the response time, early CPR, widespread CPR training, a short distance to the site of arrest, and skill of Advanced Cardiovascular Life Support (ACLS) teams (3).

As the reported prevalence of bystander CPR remains low in most cities, about 27% to 33%, mostly due to hesitation to perform ventilation (4). Investigation of the barriers to bystander action, which can be expected to substantially improve cardiac arrest survival rates, has gained increasing interest. A previous study in different US cities demonstrated that omitting mouth-to-mouth rescue breathing step from CPR was likely to improve bystander participation by simplifying CPR training and addressing the expressed concern of potential infection (4). Besides, compression-only bystander CPR may reduce the time to initiate CPR and result in delivery of a greater number of chest compressions with fewer interruptions for the first several minutes after adult out-of-hospital cardiac arrest (4).

## 2. Objectives

Given that the above-mentioned data are extrapolated from studies on the US population and considering the difference among populations, a variety of influencing factors, and lack of information about Iranian population in this regard, this survey was conducted to determine the prevalence of and barriers to CPR among medical personnel, specially nurses, since they constitute a major part of cardiopulmonary resuscitation responders and serve as educators and resource personnel concerning cardiopulmonary resuscitation (5). Particularly in a country with religious barrier to initiate mouth to mouth ventilation, it is important to study whether willingness to perform resuscitation will be increased by removing ventilation from CPR.

## 3. Patients and Methods

The present survey was conducted on 25 nurses during their CPR lectures in a routine resuscitation course at Shiraz University of Medical Sciences. Information about age and gender of the participants was collected, as well. The participants were also asked about their willingness to perform CPR versus CCR in a patient with out-of-hospital witnessed cardiac arrest.

## 4. Results

From the 25 nurses, 1 was male (4%) and 24 were females (94%) ranging in age from 21 to 46 years with the mean age of 31 years. Among the participants, 19 (76%) knew someone with cardiac arrest. Only 40% (10) were willing to perform CPR that requires mouth to mouth ventilation. On the other hand, 92% (23) were willing to perform CCR only without mouth to mouth ventilation. The mean age of the nurses who were willing to perform mouth to mouth resuscitation was lower compared to those who were not willing to perform CPR (29.6 years vs. 33 years).

## 5. Discussion

The results of the present study indicated that the nurses from the hospitals affiliated with Shiraz University of Medical Sciences were reluctant to provide chest

compressions with mouth-to-mouth ventilation. Only 40% claimed they would perform standard CPR. When the alternative of performing CCR only was offered, 92% said they would “definitely” initiate resuscitation. This survey also showed the impact of age on the willingness to perform bystander CPR. The mean age of the participants who were reluctant to perform CPR was higher compared to those who were willing to do so. Our finding is consistent with that of other studies on different populations, stating that the prevalence of CPR will be much higher when mouth-to-mouth ventilation is eliminated. For instance, in the survey Ornato and colleagues conducted on 1794 basic cardiac life support instructors regarding their attitudes toward CPR, most respondents indicated that they would not perform or would hesitate to perform mouth-to-mouth ventilation on most adult strangers (6). In another research, Brenner and Kauffman asked 433 internists and 152 medical nurses in southern California about their willingness to perform mouth-to-mouth resuscitation. The results demonstrated that 45% of the physicians and 80% of the nurses claimed that they would not perform ventilation (5, 6). Also, Locke and colleagues investigated 975 participants at the University of Arizona about their willingness to perform CPR. Based on the results, only 15% would “definitely” provide chest compression + ventilation for strangers, while 68% would “definitely” perform CCR (6).

Based on our study and the available literature, we advocate the wide spread use of chest-compression-only CPR for witnessed cardiac arrest. The current study revealed that mouth-to-mouth ventilation remains a barrier to perform CPR in Middle Eastern countries, such as Iran. We believe that public education across the world is very important that all victims of cardiac arrest should at least receive a high-quality chest compression resuscitation. The fundamental change in CPR sequence is abandoning A-B-C steps for C-A-B (all age groups excluding newly born) to minimize the delay in initiating chest compressions. Moreover, dispatchers should help bystanders recognize cardiac arrests and provide instructions on hands-only CPR (7).

The findings of the present study in a Middle Eastern country confirmed those of the previous surveys in other countries that willingness to perform resuscitation will dramatically increase if mouth-to-mouth ventilation is eliminated. The results demonstrated that these concerns regarding mouth-to-mouth ventilation remain a barrier to resuscitation even among healthcare providers. Therefore, public education should be extended across the world about CCR only as an alternative to CPR in order to increase bystanders’ effort to perform lifesaving resuscitation for witnessed cardiac arrest victims.

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## Authors’ Contribution

Both authors have equal roles in providing the article.

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