Original Research Article

A Study to Assess the Level of Knowledge Regarding Cardiopulmonary Resuscitation among General Population in Chennai

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ABSTRACT

CPR can consist of many different things, but the initial, vital part is Basic Life Support (BLS). Cardio means "of the heart" and pulmonary means "of the lungs". Resuscitation is a medical word that means "to revive" or bring back to life. Sometimes cardiopulmonary resuscitation (CPR) can help a person who has stopped breathing, and whose heart may have stopped beating, to stay alive. Despite advances in cardiopulmonary resuscitation (CPR) methods, including the introduction of the automatic electrical defibrillator (AED) and therapeutic hypothermia, only about 10% of adult out-of-hospital cardiac arrest (OHCA) victims survive to hospital discharge, and the majority of survivors have moderate to severe cognitive deficits 3 months after resuscitation. Resuscitation from cardiac arrest is the ultimate whole body is calmer perfusion (I/R) injury affecting multiple organ systems including the brain and heart. The present study aims to assess the Level of knowledge on regarding cardiopulmonary Resuscitation among the general population. Quantitative research approach descriptive research design was conducted among 100 people age group between 20-50 years who met the General population. Randam sampling technique was used selected areas of Chennai. A structured knowledge questionnaire was used to collect demographic data and levels of knowledge are assessed. The investigator gives a thorough description about the tool and data collection procedure. At first demographic details are obtained through structured profile from the peoples. The investigator administers structured knowledge questionnaire which took approximately 30 minutes to complete the process. The present study shows that previous knowledge about CPR of demographic variables shows a statistically significant association between the level knowledge with selected demographic variables at p<0.0001 and the anger demographic variables had not shown a statistically significant association with level of knowledge among CPR.

Keywords: *Level of knowledge, Cardiopulmonary resuscitation, General population.*

INTRODUCTION

The heart is the center of cardiovascular system and it is vitally responsible for just about everything that gives the body life ranging from the transportation of oxygen to the success of the immune system. However, the foods we eat and the amount of activity choose to take part in dramatically affect the overall health of the heart and the many other tissues that make up the cardiovascular system. The heart is a muscular organ about the size of a closed fist that functions as the body's circulatory pump. It takes in deoxygenated blood through the veins and delivers it to the lungs for oxygenation before pumping it into the various arteries (which provide oxygen and nutrients to body tissues by transporting the blood throughout the body).[1]

Each year, a number of persons suffer with an accident or illness, severe enough to stop their breathing and leads to

respiratory arrest. In a small number of these cases, it will even stop their heart beating and leads to cardiac arrest. Sudden cardiac arrest is a major cause of death in developing countries. Sudden death occurs when heartbeat and breathing stops. The other common causes of sudden death include heart attack, electrical shock, drowning, choking, suffocation, trauma, drug reactions, and allergic reactions. The best chance of ensuring their survival is to give them emergency treatment known as cardiopulmonary resuscitation (CPR). CPR can consist of many different things, but the initial, vital part is Basic Life Support (BLS). Cardio means "of the heart" and pulmonary means "of the lungs".[2] Resuscitation is a medical word that means "to revive" or bring back to life. Sometimes cardiopulmonary resuscitation (CPR) can help a person who has stopped breathing, and whose heart may have stopped beating, to stay alive. Despite advances in cardiopulmonary resuscitation (CPR) methods, including the introduction of the automatic electrical defibrillator (AED) and therapeutic hypothermia, only about 10% of adult out-of-hospital cardiac arrest (OHCA) victims survive to hospital discharge, and the majority of survivors have moderate to severe cognitive deficits 3 months after resuscitation.[3]

Resuscitation from cardiac arrest is the ultimate whole body ischemia reperfusion (I/R) injury affecting multiple organ systems including the brain and heart. In most cases, defibrillation and other means of advanced life support are not immediately available.[4] In urban settings it takes an average of nearly ten minutes for professional help to arrive. During this time victims can only rely upon CPR provided by educated by standers. Therefore a substantial burden of responsibility lies on the shoulders of educators who need to pass on their knowledge and skills of CPR to their trainees in a way simple enough to be remembered and recalled rapidly in a highly stressful moment. It has been shown that correctly performed bystander CPR may positively influence short and long- term survival of cardiac arrest victim.[5]

Every nurse and physician should be skilled in CPR because cardiac arrest, the sudden cessation of breathing, and adequate circulation of blood by the heart, may occur at any time or in any setting. Resuscitation measures are divided into two components, basic cardiac life support and advanced cardiac life support.[6] The American Heart Association establishes the standards for CPR and is actively involved in teaching BCLS and ACLS to health professionals. The American Heart Association recommends that nurses and physicians working with patients be certified in BCLS and ACLS. CPR alone is not enough to save lives in most cardiac arrest. It is a vital link in the chain of survival that supports the victim until more advanced help is available. The chain of survival is composed of the following sequence: early activation of the EMS system, early CPR, early defibrillation and early advanced care.[7]

CPR is a rescue procedure to be used when the heart and lungs have stopped working. There is a wide variation in the reported incidence and outcome for out of hospital cardiac arrest. These differences are due to the definition and ascertainment of cardiac arrest as well as differences in treatment after its onset. Several authors described the problem of poor performance in CPR, even when provided by medical professionals. Numerous investigations have reported the problem of poor skills retention after various CPR courses. Studies reporting the need for improvement of resuscitation techniques led to the recent changes in BLS and ALS algorithms. Dangers of Sudden Cardiac Arrests (SCA) that can lead to death of an individual within a few minutes.[8]

As per WHO census statistics mortality due to cardiac arrest approximately 4280 out of every one lakh people die every year from SCA in India alone. After a cardiac arrest there are four to six minutes before brain death and death occur. Chances of survival, reduce by 7-10 percent with every passing minute. It is a

silent epidemic. Cardiac arrest is reversible if the victim is administered prompt and appropriate emergency care. This generally involves administration of cardiopulmonary resuscitation (CPR), shock treatment to the chest to reset the heart's rhythm (defibrillation) and advanced life support. In India the annual incidence of sudden cardiac death accounts for 0.55 per 1000 population. The survival rate of a sudden cardiac arrest is almost less than 1%. Sudden cardiac death constitutes 40-45% of cardiovascular deaths and out of this almost 80% are due to heart arrhythmia disturbances or arrhythmia.[9]

On April 2008, the American heart association took steps to simplify the process of helping victims of cardiac arrest by introducing "hands only" CPR. About one third of people who suffer a cardiac arrest at home or at a public place actually receives help, bystanders could be afraid to initiate CPR for fear that they will do something wrong or won't know what to do. Others may be reluctant to perform mouth to mouth breathing for fear of contracting an infection. The American heart association proposed the new guidelines in order to allow bystander who have not been trained in conventional CPR or who may fear making mistake a way to offer help. Survival in hospital and they reviewed that CPR records, 44% of the patient initially survived following CPR, and the 1 –year survival rate was 5% patients with shorter durations of CPR and those administered fewer procedures and medications during CPR survival longer than patients with prolonged CPR.

The purpose of the study [1] To assess the level of knowledge regarding cardio pulmonary resuscitation among general population in Chennai. [2] To find out the association between the level of knowledge on regarding cardiopulmonary resuscitation among general population in Chennai with their selected demographic variables.

METHODS AND MATERIALS

A quantitative research approach descriptive research design was used to conduct the study. 100 people aged between 20 to 50 years were selected for this study. The criteria for sample selection all age group between 20-50 years who met the General population who satisfies the inclusion criteria for sample selection are peoples living only in the areas of Chennai and peoples who are willing to participate and peoples whose age is between 20 to 50 years and peoples who knows to read and write English. Before commencing the data collection, obtaining formal permission from the Principal and IRB Saveetha College of Nursing. A total of 100 samples who fulfilled the inclusion criteria. were selected using random sampling techniques. The data are collected during the month of May and June. A brief introduction of self and explanation on the purpose of the study is given. The written consent is obtained from the participants. The investigator gives a thorough description about the tool and data collection procedure. At first demographic details are obtained through structured profile from the peoples. The investigator administers structured knowledge questionnaire which took approximately 30 minutes to complete the process. The data were analyzed using descriptive and inferential statistics. The sample characteristics were described using frequency and percentage. The Chi-square test was used to associate the level of knowledge with selected demographic variable.

RESULT AND DISCUSSION

Frequency and percentage distribution of demographic variables, general population in Chennai. Out of 100 samples shows that, Regarding age 41(41%) 0f respondents are in the group of 20-30 years, 38 (38%) of respondents are in the group of 31-40 years, 21(21%) of respondents are in the group of 41-50 years. (fig.1) According to the sex, 68(68%) of respondents are male and 32 (32%) of

respondents are female.(fig.2) According to the educational status, 28(28%) of respondents are higher secondary, 54 (54%) of respondents undergraduate and 18(18%) of respondents are postgraduate. According to residential area of samples, 72 (72%) of respondents are from urban area and 28(28%) of respondents are from rural areas. According to the type of family, 12(12%) of samples are belong to joint family, 88(88%) of the samples are belong to nuclear family. According to the religion, 55(55%) of samples are Hindu, 24(24%) of samples are Christian, 21(21%) of samples are Muslim. According to their previous knowledge, 7(7%) of samples are having previous knowledge about CPR and 93(93%) of samples are not having knowledge about CPR.
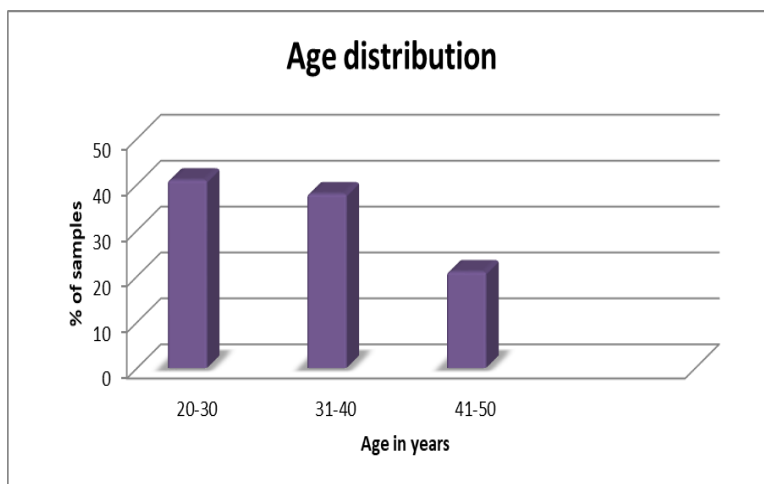

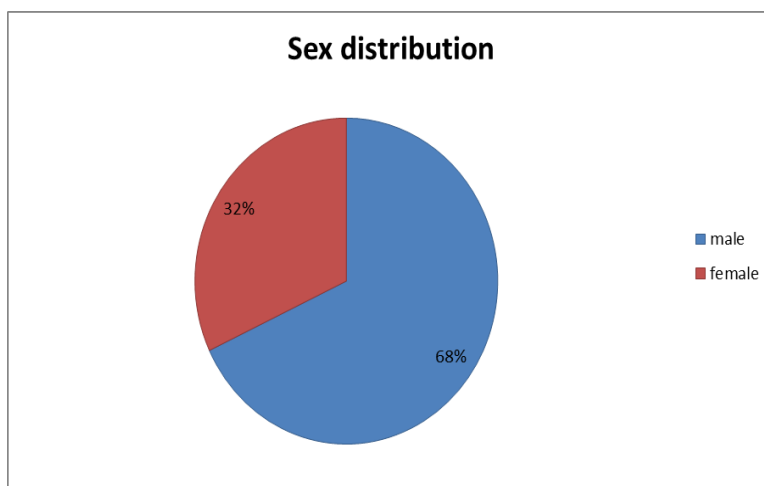**Fig.1: Bar diagram showing age distribution of the samples**

Fig.2: Bar diagram showing sex distribution of the samples

The present study was conducted by Eisenberg MS, Becker LJ, et al. 2003. Getting a handle on the number of sudden cardiac arrests is a bit trickier. If one looks only at death certificates the figure is 456,000 per year. I think a more realistic figure is 155,000, the number of sudden deaths in which emergency medical services are called and attempt to resuscitate the individual. This lower figure gives a more realistic picture of the number of persons who are potentially "resuscitatable" from cardiac arrest since it does not include persons who are found cold and dead (even though their deaths may be coded as acute coronary heart disease). To put this in perspective, the EMS system in King County in 2000 responded to 1428 calls for cardiac arrest but attempted resuscitation on 808. The other 620 were considered dead on

arrival. In addition the vital statistics office in King County recorded 1029 out of hospital deaths from heart disease for which the EMS system was not called. There were also 1249 deaths in hospital without an out of hospital cardiac arrest. (The total deaths from heart disease was 3705 during the year) EMS personnel responded to 57% (1428/2457) of all out of hospital death events but only 39% (1428/3705) of all deaths.

The another study was conducted by Singh, L Ranbir and Team in Rims Hospital, Manipur.(2002) A study of 32 children with near drowning, admitted in RIMS Hospital, Manipur during January1997 to December 2000 revealed that near drowning accounted for 0.29% of total pediatric hospital admissions. The prominent characteristics of pediatric near drowning were male sex 65.6%, age below 3 years 75%, summer season 43. 7%, residential pond 71.9%, morning hours 56.3%. 26 (81.2%) cases had varying degrees of pulmonary aspiration. Neurologically, 5 (15.6%) cases were awake 21 (65.6%) cases had blunted levels of consciousness and 6 (18.8%) cases were comatose at the time of arrival. Following cardiopulmonary resuscitation (CPR) at the scene of rescue and appropriate respiratory and cardiovascular support on arrival, 31 (96.9%) cases had intact survival and only 1 (3.1%) had a mild neurological sequel at the time of discharge. There was no mortality.

Frequency and percentage distribution level of knowledge on regarding cardiopulmonary resuscitation shows that out of 100 samples 87 (87%) members had inadequate knowledge, 11(11%) members had moderate knowledge, 2 (2%) members had an adequate level of knowledge among CPR.

Table 1: frequency and percentage distribution of knowledge level about CPR (n=100)

Level of knowledge	Frequency (100)	Percentage (%)
Inadequate knowledge	87	87%
Moderate knowledge	11	11%
Adequate knowledge	-	2%

The present study was conducted by Dr. H. Shankar (2008). The study conducted related to cardiac arrest and CPR. The study shows that the sudden cardiac arrest in the hospital setup can be anticipated at any time. Are be prepared to handle such an event around us? We are experienced in our emergency department during the month April 2008. The patients were successfully resuscitated and went home after a few days walking their own without any neurological deficits

The other study was conducted by Benjamin S. Abella et al (2005) conducted a study on quality of cardiopulmonary resuscitation during in hospital cardiac arrest. The main objective of this study is to measure multiple parameters of in-hospital CPR quality and to determine compliance with published American Heart Association and international guidelines. The sample consisted of 67 patients who were experienced in-hospital cardiac arrest at the University Of Chicago Hospitals, Chicago. The result of this study indicates that the importance of high-quality CPR suggests the need for rescuer feedback and monitoring of CPR quality during the resuscitation effort.

Out of 100 samples 87 (87%) members had inadequate knowledge, 11 (11%) members had moderate knowledge, 2 (2%) members had an adequate level of knowledge among CPR.

The present study was conducted by Tom Sirmons, August 2, 2011, A wealth of recent research reaches the same conclusion: those who suffer cardiac arrest are far more likely to survive long-term if a bystander immediately begins proper CPR. That's especially true when emergency medical personnel are unable reach the scene within eight minutes. BUT – considering that brain damage from lack of blood flow begins as soon as four minutes after heart failure, the need for CPR administration is vital, in the truest sense of that word, no matter how good you think EMT response-time is in your area. And there's more: If you learned CPR five or

more years ago, you are almost certain to apply it incorrectly. Granted, survival rates are higher even among those who receive

Outdated CPR, but the American Heart Association now stresses that maintaining blood flow to the organs is more important than trying to restore breathing via mouth to-mouth resuscitation. In fact, a study published in The Lancet several months ago found survival rates among heart attack victims are substantially higher when only proper chest-compression is administered. The old model of alternating compressions with breaths into the victim's lungs is less effective. Also, note the italicized words above – proper. Chest compressions must be performed with the right combination of repetition and depth to achieve optimal results. In a word, that means training. It's not a matter of instinct or common sense to know how hard and how often to press down on a cardiac victim's sternum. The fact is that it's harder and more frequently than trained person is likely to realize. Here's a hint about compressions: more than one per second! While a 911 dispatcher can you give, you basic information over the phone, nothing takes the place of training, which is so readily accessible in almost every community.

The other study was supported to our results that Karan Prakash Singh 2 May 2011 and team assess the knowledge and personal experience with CPR among dentist in Udaipur India. This study shows that 75.9% of dentist had received information about basic CPR but only66.0% had the current concept of performing it and only 12% had received practical training in basic CPR. 1 in 10 dentists had seen patients suffering from cardiopulmonary arrest in their practice, but none –of them mentioned any fatality, because CPA. The level of knowledge was significantly higher among faculty dental practitioner compared with local dental practitioner. In addition a positive linear correlation was found between educational level and knowledge level.

Mean and standard deviation and mean percentage of inadequate knowledge among CPR is 8.80, mean percentage of moderate knowledge among CPR is 155.36, and mean percentage of adequate knowledge among CPR is1175. Mean and standard deviation of the level of knowledge about CPR of the mean and standard deviation values are 9.01 and 4.9162.

Table 2: Mean and standard deviation of level of knowledge on regarding cardio pulmonary resuscitation (n=100)

S.No	Level of knowledge	Mean	Standard deviation	Mean percentage
1	Inadequate knowledge	7.66	3.5422	8.80
2	Moderate knowledge	17.09	1.5640	155.36
3	Adequate knowledge	23.5	0.5	1175.

Table 3: Mean and standard deviation of the level of knowledge about CPR of the mean and standard deviation

Level of knowledge	Mean	Standard Deviation
Statistical values	9.01	4.9162

The present study was conducted by Losert H et al (2006) conducted a observational study on quality of cardiopulmonary resuscitation among 95 highly trained staff nurses in an emergency department of the tertiary care hospital, Austria. The findings of this study was highly trained professionals in an emergency department can achieve appropriate chest compression rates during CPR with a low hands-off ratio. Increased attention must be paid in all situations to the avoidance of hyperventilation.

The another study was conducted by Thoren Ann-Britt et al (2005) has conducted a study on Possibilities for, and obstacles to, CPR training among 401cardiac care patients and 311co-habitants. The aim of the study was to investigate the level of cardiopulmonary resuscitation (CPR) training among cardiac patients and their co-habitants. According to the answers given by the patients, 46% of the patients and 33% of the co-habitants had attended a CPR course at some time. Younger persons have been more often willing to undergo training

than older persons. Of those patients who had previously attended a course or who were willing to undergo training, 72% were prepared to do so together with their co-habitant. The main outcome was the two-thirds of the patients did not believe that their co-habitant had taken part in CPR training. More than half of these would like their co-habitant to attend such a course. Seventy-two percent were willing to participate in CPR instruction together with their co-habitant. Major obstacles to CPR training were doubts concerning the cohabitant's willingness or physical ability and their own medical status.

Previous knowledge about CPR of demographic variance shows a statistically significant association between the level knowledge with selected demographic variables at p<0.0001 and the anger demographic variables had not shown a statistically significant association with level of knowledge among CPR. *p=0.0001, S=significant, N.S= non significant

The present was conducted by Celenza T, Gennat, Brien D, 2002 November, The study conducted on community competence in CPR. The aim of this study was to determine community application of CPR skills in an emergency and to assess the value of training programs in raising community competence. A telephone survey was conducted, the population was chosen randomly. Sub sample performed a practical demonstration of CPR skills using a manikin as the victim, performance was assessed by two observers using pre-determined criteria.

The other study was conducted by LAN H Kerridge et al (1998) conducted a study on decision making in CPR: attitudes of hospital patients and healthcare professional. The purpose of this study was to examine the opinions of patients and healthcare professionals regarding the process of making decisions about cardiopulmonary resuscitation. The samples consist of 511 health care professionals and 152 patients at the John Hunter Hospital, Newcastle, New South Wales. 80% of patients and 99% of health care professionals thought patients' views should be taken into account when making CPR decisions. More patients than health care professionals indicated that doctors should be the main decision makers. Most patients and healthcare professionals wanted their views in their medical records. Results indicated that the 80% patients, 99% of health care professionals want to be involved in CPR decision making and many want some form of advance directives.

CONCLUSION

It is concluded that level of knowledge on regarding cardiopulmonary resuscitation shows that out of 100 samples 87(87%) members had inadequate knowledge, 11(11%) members had moderate knowledge, 2(2%) members had an adequate level of knowledge among CPR.

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Authors' Contribution

All the authors actively participated in the work of the study. All authors read and approved the final manuscript.

Conflicts Of Interest

The authors declare no conflicts of interest.

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