A CROSS-SECTIONAL STUDY TO ASSESS THE LEVEL OF AWARENESS, KNOWLEDGE AND ATTITUDE TOWARDS BASIC LIFE SUPPORT AMONG NON-MEDICAL ADULT POPULATION IN THE CITY OF CHENNAI

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ABSTRACT

Background:

Knowledge of BLS and practice of simple CPR techniques increase the chances of survival of the patient until experienced medical help arrives and, in most cases, is sufficient for survival in itself. It is important that those who may be present at the scene of a cardiac arrest, particularly lay bystanders, have knowledge of appropriate resuscitation skills and the ability to put these into practice. Therefore, this study was done to assess the level of knowledge, attitude and practices regarding Basic Life Support among nonmedical adult population in Chennai.

Methods:

This was a community based Cross-sectional study conducted between February to March 2023 among individuals residing in an urban locality of Chennai, Tamilnadu. Individuals of both genders aged 18 years and above who were not graduated from or studying at any medical field colleges (medicine, pharmacy, nursing, dentistry, and laboratory) were included in the study. Sample size was calculated to be 399. Sampling was done by random walk method. Institution Ethics approval was obtained prior to the start of the study. Data was collected using a structured, interviewer administered pre-validated questionnaire.

Results:

The mean age of the respondents was 41.3 ± 6.5 years and about 53.6% of the respondents were males. When questioned about this 39% had answered to call an ambulance, while 38% gave the response to call other pedestrians, 23% had stated "Ensure the safety of the scene" while nobody had chosen the response "start compressions". For the question regarding the rate of chest compressions on an unresponsive victim 47% of the participants answered 100-200/min while 31% had answered 80-100/min, 15% had answered as fast as possible and 7% gave the response "I don't know". About 81% of the participants had never received any training on CPR and 98% of them think that CPR training should be offered to the public.

Conclusion:

Majority of the population did not have the chance to learn about BLS and training for the same must be provided from childhood in places such as schools and summer workshops. Even basic introduction and workshops in BLS will be useful in improving the ability of the public in recognising people in cardiac arrest and initiating BLS.

Keywords: **Knowledge, attitude, practice, Basis Life support, non-medical adults**

INTRODUCTION

Out-of-hospital cardiac arrest is a major cause of mortality that accounts for 15% of the deaths worldwide.[1] When basic life support techniques are implemented quickly, the chance of survival is doubled. Cardiopulmonary resuscitation (CPR) is a lifesaving technique that's useful in many emergencies, such as a heart attack or near drowning, in which someone's breathing or heartbeat has stopped.

The American Heart Association recommends starting BLS with hard and fast chest compressions. Ideally, everyone in the community, but most importantly, the medical personnel, must be aware of BLS and also advanced cardiac life support.[2] This hands-only CPR recommendation applies to both untrained bystanders and first responders. According to the 2020 AHA guidelines on BLS, the importance of early initiation of BLS by lay rescuers is emphasized. Laypersons are to initiate BLS for presumed cardiac arrest because the risk of harm to the patient is low if the patient is not in cardiac arrest.

Studies show that 14.3% of patients experiencing cardiac arrest have undergone BLS before transport to the hospital, and almost all of them will undergo cardiopulmonary resuscitation at the hospital. Success of BLS invariably decreases with the increased interval from cardiac arrest to start of BLS. The interval from cardiac arrest (CA) to initiation of chest compressions (no-flow time) plays an important role in outcome of Cardiac Arrest. Studies are showing that less than 28.7% of non-medical people are receiving training for BLS.[3] Often the first person to notice a collapse is a bystander, increasing their abilities to provide a BLS can decrease the no-flow time and in turn increase the chances of survival of the patient.[4]

Basic life support (BLS) includes recognition of signs of sudden cardiac arrest, heart attack, stroke, and foreign body airway obstruction, and the performance of cardiopulmonary resuscitation (CPR) and defibrillation with an automated external defibrillator. Cardiac arrests and accidents are the most common type of emergencies with grave consequences, but simple maneuvers and skills can improve the outcome, and immediate CPR can double or triple the chances of survival.

Study conducted in India on the prevalence of Sudden Cardiac Arrest came to be roughly 7 Lakh cases in a year. The majority of patients who experience an out-of-hospital cardiac arrest do not receive adequate resuscitation by health care professionals within the critical time, 3–5 min after onset, thus reducing the chance of survival. The chance of successful resuscitation after sudden cardiac arrest decreases by 7–10% with every minute that resuscitation is delayed. Early delivery of a shock with a defibrillator (CPR, plus defibrillation) within 3–5 min of collapse can result in survival rate of 49–75%.[5] Knowledge of BLS and practice of simple CPR techniques increase the chances of survival of the patient until experienced medical help arrives and, in most cases, is sufficient for survival in itself. It is important that those who may be present at the scene of a cardiac arrest, particularly lay bystanders, have knowledge of appropriate resuscitation skills and the ability to put these into practice. Therefore, this study aims at evaluating public awareness, knowledge and attitudes towards basic life support.

OBJECTIVES

- To assess the level of knowledge, attitude and practices regarding Basic Life Support among nonmedical adult population in Chennai.

METHODOLOGY:

This was a community based Cross-sectional study conducted between February to March 2023 among individuals residing in an urban locality of Chennai, Tamilnadu. Individuals of both genders aged 18 years and above who were not graduated from or studying at any medical field colleges (medicine, pharmacy, nursing, dentistry, and laboratory) were included in the study.

People who do not wish to participate in the study were excluded. Sample size was calculated to be 399 based on the proportion of non medical people (28.7%) who knew to perform CPR from a previous study[3] and assuming 5% error at 5% level of significance. Selection of houses in the locality for the study was done by random walk technique where the direction taken and the distance moved between two houses is determined by random numbers, drawn most usually from random-number tables and all the eligible participants in the houses were selected for the study.

Institution Ethics approval was obtained prior to the start of the study. Informed written consent from the participants was obtained before enrolling the participant or using their data in this research. Once the participant had given consent for the study, they were given a questionnaire to collect the preliminary data for this study. Data was collected using a structured, interviewer administered pre-validated questionnaire prepared in English and translated to Tamil by the interviewer through a face-to-face interview using the questionnaire under full privacy and confidentiality.

The first section of the questionnaire contained the participant's particulars/information and demographic details.

The second part of the questionnaire contained 3 sections of Questions each regarding Knowledge towards BLS, Attitude towards BLS and BLS practice.

Correct cardiac arrest findings and algorithms of BLS were determined according to the 2015 European Resuscitation Council Resuscitation Guidelines,[6] the 2017 American Heart Association Focused Update on Adult BLS and CPR Quality.[7]

Data was checked for completeness and consistency and entered in MS office Excel and descriptive statistics were calculated.

RESULTS

TABLE 1: DEMOGRAPHIC CHARACTERISSTICS OF THE PARTICIPANTS

		Mean/ n(%)
AGE		41.3±6.5 years
GENDER	MALE	214(53.6)
	FEMALE	185(46.4)
EDUCATIONAL STATUS		
	PRIMARY SCHOOL	10(2.5)
	MIDDLE SCHOOL	45(11.3)
	HIGH SCHOOL	87(21.8)
	DIPLOMA	33(8.3)
	GRADUATE	224(56.1)
OCCUPATION		
	STUDENT	44(11)
	HOUSEWIFE	75(18.7)
	SELF EMPLOYED	183(45.9)
	PRIVATE SECTOR	21(5.3)
	GOVERNMENT SERVICE	53(13.3)
	RETIRED	23(5.8)

The study has a total of 399 participants. The participants were distributed between males and females with mean age of 41.3± 6.5years. About half of the participants were graduates and 45.9% of them were self-employed. (Table 1)

Knowledge regarding BLS:

WHAT IS TO BE DONE WHEN THEY FIND AN UNRESPONSIVE PERSON ON THE SIDEWALK
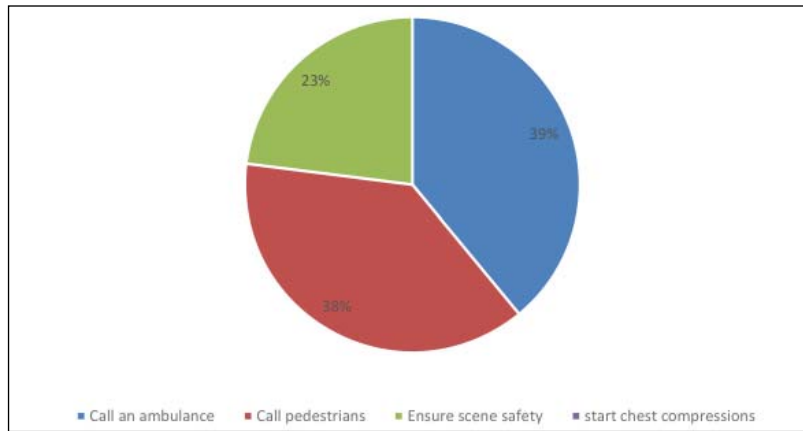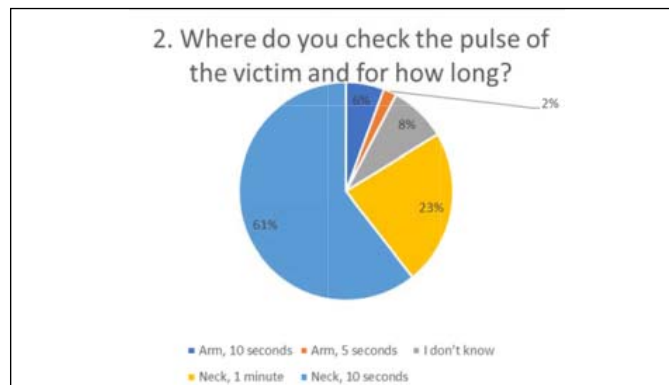

Figure 1 - The pie chart illustrates the responses to the question - When asked what is to be done when they find an unresponsive person on the sidewalk; the following answers were received - call an ambulance (39%), call pedestrians (38%), ensure scene safety (23%) and start chest compressions (0%).

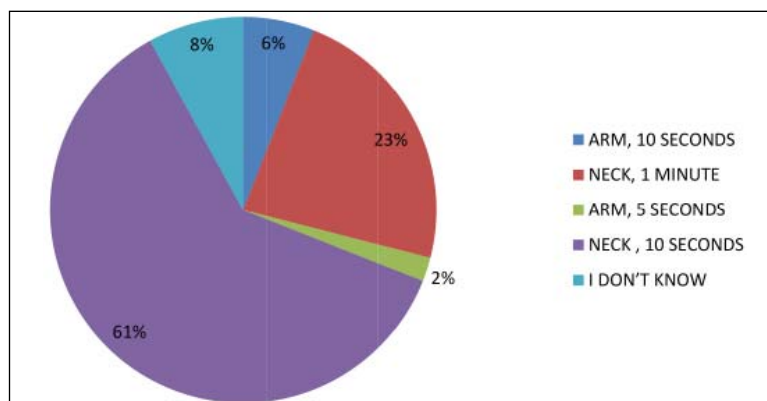**WHERE DO YOU CHECK THE PULSE OF THE VICTM AND FOR HOW LONG**

Figure 2 - The above mentioned chart illustrates the responses to question - Where do you check the pulse of the victim and for how long - check the neck for 10 seconds (61%) , Neck for 1 minute (23%), Arm for 10 seconds (6%), Arm for 5 seconds (2%), I don't know (8%)

8

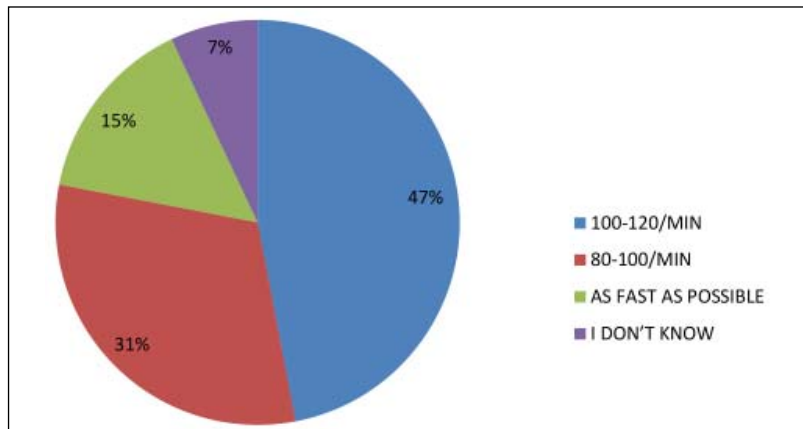**AT WHAT RATE WOULD YOU DO CHEST COMPRESSIONS ON AN UNRESPONSIVE VICTIM?**

Figure 3 - The pie chart illustrates the response received when asked the rate of compressions on an unresponsive victim; the following answers were received - 100-120/min (47%), 80-100/min (31%), as fast as possible (15%) and I don't know (7%).

WHEN PERFORMING CHEST COMPRESSIONS, WHICH OF THE FOLLOWING ARE IMPORTANT?
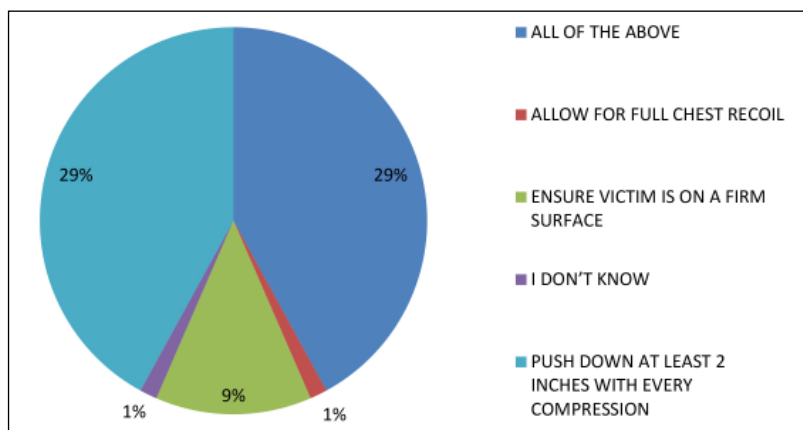

Figure 4 - the above mentioned pie chart illustrates responses to the question -When performing chest compressions which of the following is important ? all of the above (60%), push down atleast 2 inches with every compression (29%), ensure victim is on a firm surface (9%), i dont know (1%) and allow for full chest recoil (1%).Push down at least 2 inches with every compression (29%), Allow for the chest to recoil (1%), Ensure the victim is on a firm surface (9%), All of the above (60%), I don't know (1%)

9

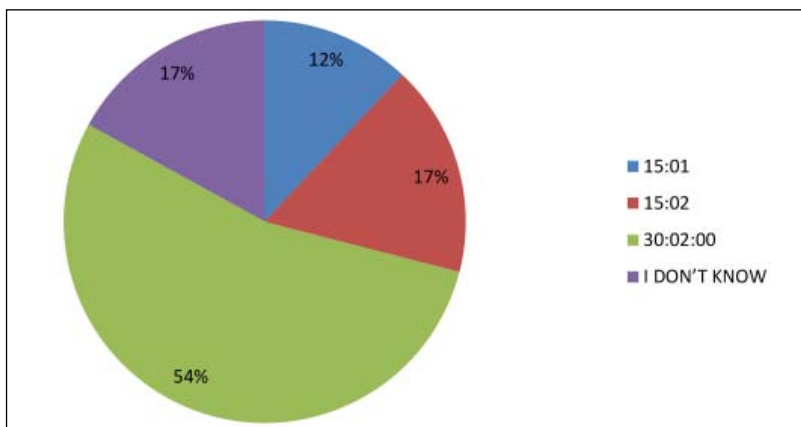**WHAT IS THE COMPRESSION-VENTILATION RATIO?**

Figure 5 - The above mentioned pie chart illustrates the responses to the question - What is the compression-ventilation rate ?- 15:1 (12%), 15:2 (17%), 30:2 (54%), I don't know (the pie chart illustrates the response to compression-ventilation ratio; the following answers were received - 30-2 (54%), i dont know (17%), 15-2 (17%), 15-1 (12%).

Attitude towards BLS:

ARE YOU CONFIDENT OF RECOGNISING A PATIENT IN NEED OF CPR?
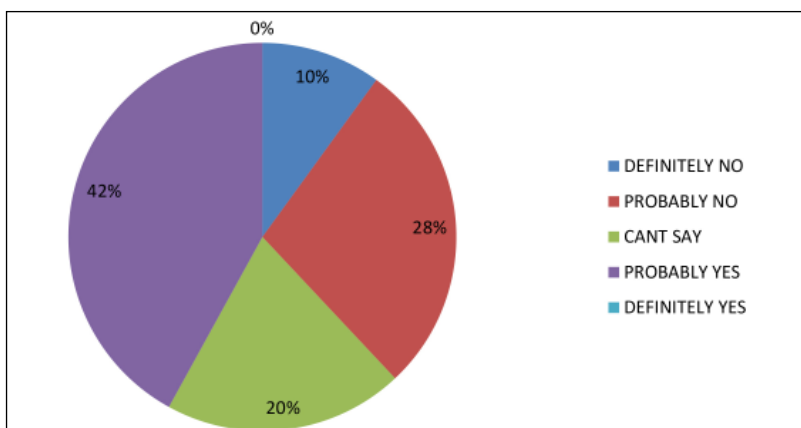
Confidence of recognising a person in need of CPR and providing CPR:

Figure 6 - The pie chart illustrates the response received to "confidence of recognising a person in need of CPR?" Definitely no (10%), probably no (28%), can't say (20%), probably yes (42%) and definitely yes (0%).

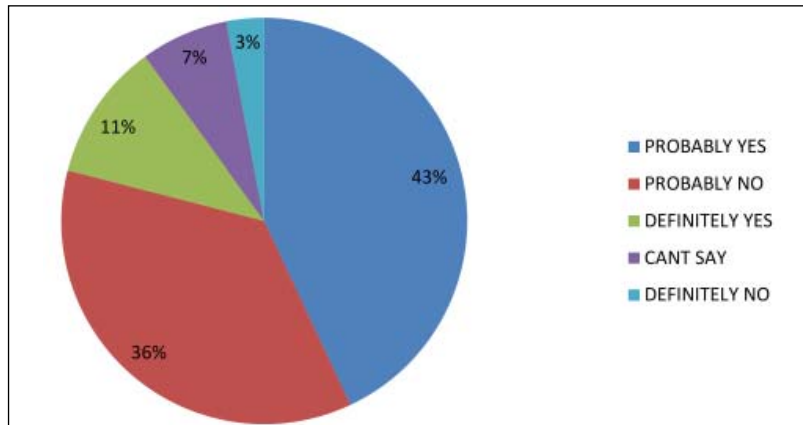**ARE YOU CONFIDENT OF PROVIDING CHEST COMPRESSIONS?**

Figure 7 - The pie chart illustrates the response received to assess confidence of providing chest compression. The following responses were received - probably yes (43%), probably no (36%), definitely yes (11%), cant say (7%) and definitely yes (3%).

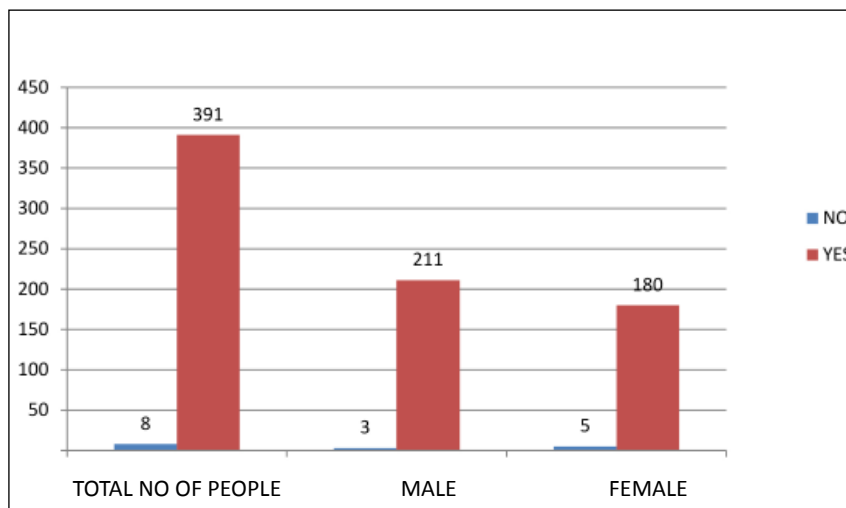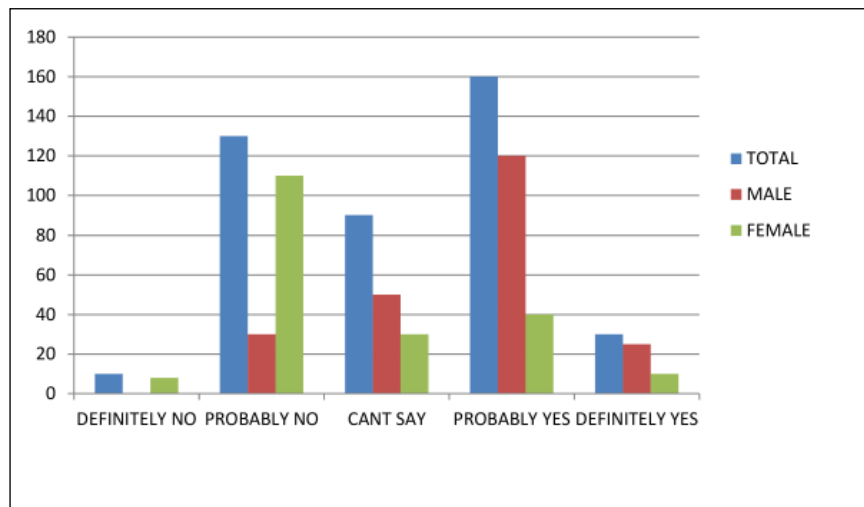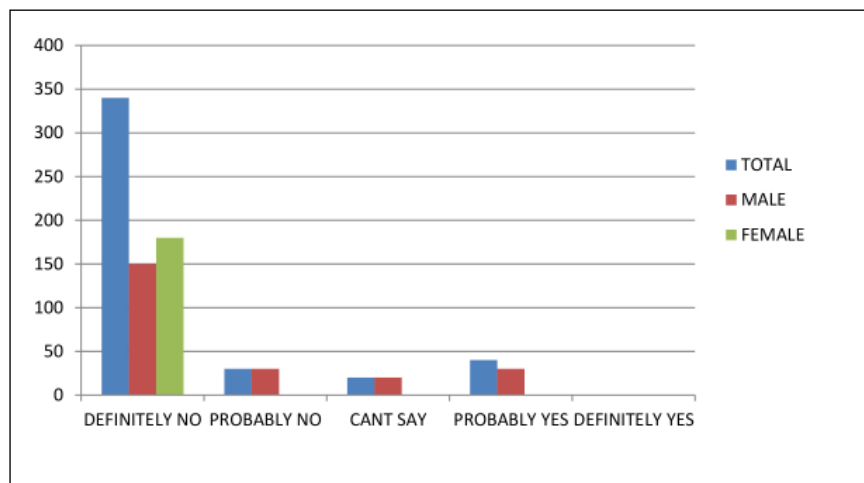**DO YOU THINK CPR TRAINING SHOULD BE OFFERED TO PUBLIC?**

Figure 8 - the bar graph illustrates the attitude of Total Population (391), Male (211) and Female (180) to the question whether CPR training should be offered to public.

ARE YOU WILLING TO DO CHEST COMPRESSIONS ON A STRANGER?

ARE YOU WILLING TO DO MOUTH VENTILATION ON A STRANGER?

Willingness to do CPR:

Figure 9- The above mentioned bar graph illustrates the responses to the question Are you willing to do chest compressions on a stranger - A reference value was set to compare the behaviour between males and females. Around 40.1% of the participants were willing to do chest compressions on a stranger and 32.8% were not willing to perform chest compressions. About 83.4% of the participants were definitely not willing to do mouth to mouth ventilation on a stranger,out of which 72.9% of them were females.

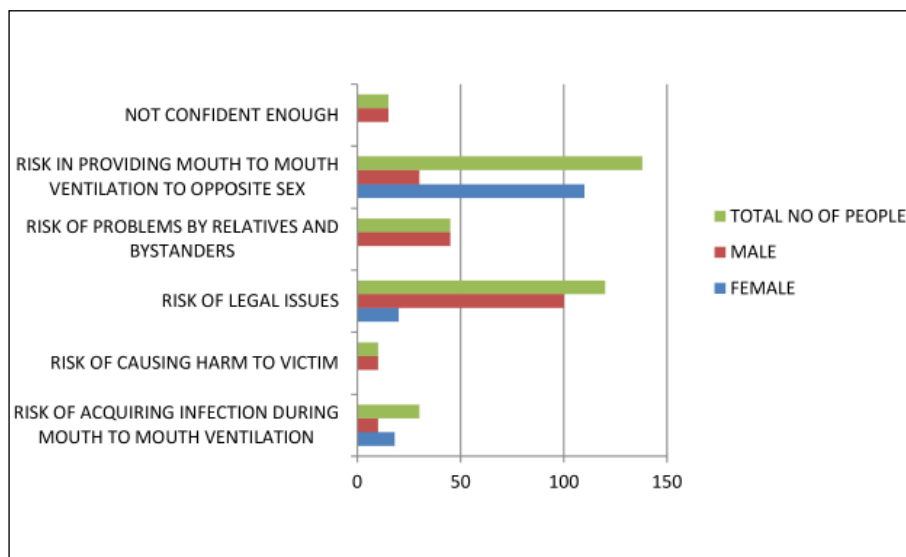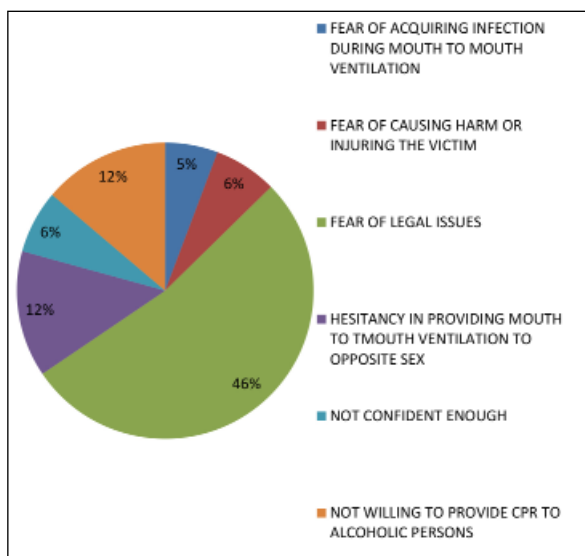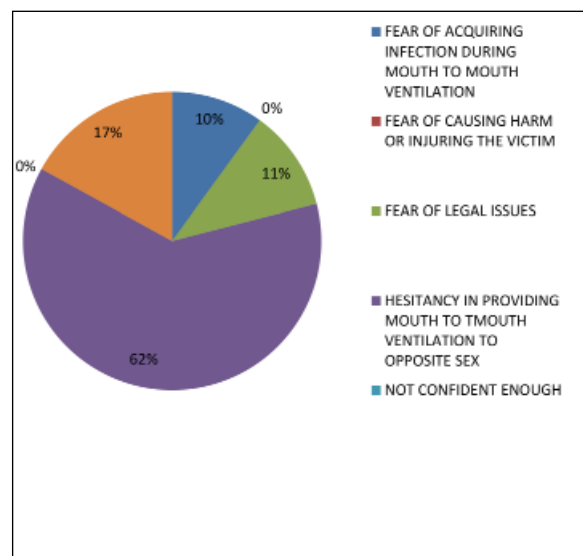**IF NOT WILLING TO PERFORM CPR, THEN STATE THE REASON**

Figure 10 - The above mentioned bar graph represents the reasons for not willing to perform CPR, about 35% of them stated that they were hesitant in providing mouth to mouth ventilation to the opposite sex and 30% of them had fear of legal issues.

IF NOT WILLING TO PERFORM, THEN STATE THE REASON - MALE

IF NOT WILLING TO PERFORM, THEN STATE THE REASON - FEMALE

11.1

11.2

**Figure 11.1 and 11.2 -** The above two pie charts compare the difference in reasons stated by males vs females for not willing to perform CPR - Among males,46% of them had fear of legal issues and 20% of them had fear of problems from relatives and bystanders.Among females, 62% were hesitant in providing mouth to mouth ventilation to the opposite sex and 17% of them are not willing to provide CPR to alcoholic persons.
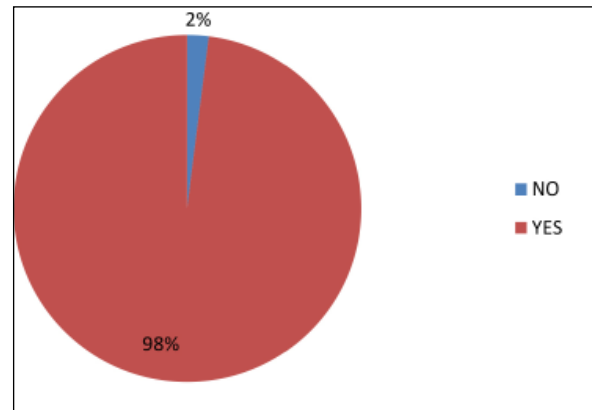
Training in CPR:

HAVE YOU EVER RECEIVED TRAINING IN CPR?

19%

81%

■ NO
■ YES
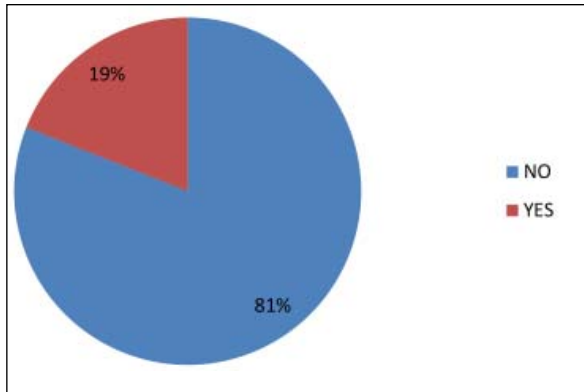
12.1

DO YOU THINK CPR TRAINING SHOULD BE OFFERED IN PUBLIC?

2%

98%

■ NO
■ YES

12.2

Figure 12.1 - The above mentioned pie chart represents the percentage of participants who received CPR training.Among the whole sample, only 19%(n=76) of them stated that they have received training in CPR.
Figure 12.2 - Around 98% of the participants think that CPR training should be offered to the public.

Practice of CPR:

HAVE YOU EVER SEEN CPR BEING DONE?

2%

98%

■ NO
■ YES
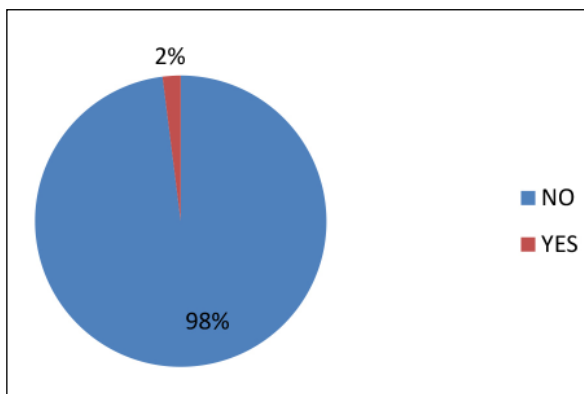
13.1

HAVE YOU EVER DONE CPR?

1%

99%

■ NO
■ YES
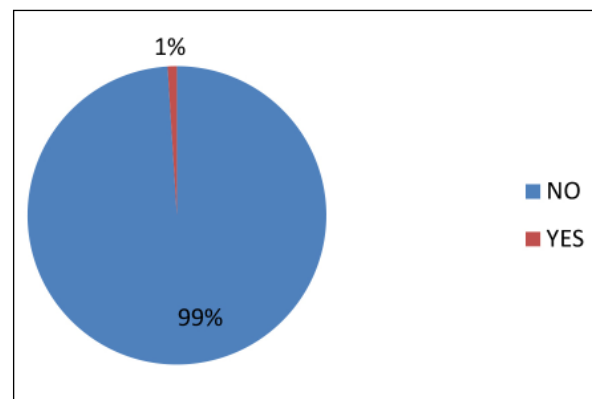
13.2

Figure 13.1 - The above mentioned pie chart illustrates the percentage of participants who have ever seen CPR being done - Out of the 399 participants, only 2% of them have witnessed CPR being performed.
Figure 13.2 - only 1% have performed CPR.

DISCUSSION:

The burden of cardiovascular disease is immense and increasing[8-11]. Sudden cardiac death (SCD) is often the first manifestation of cardiovascular disease.

Awareness of basic life support skills is essential to the general public and the communities as they are life-saving skills from which all members of the society benefit. It is expected from a majority of community members to be efficiently aware of BLS (especially CPR).[12] CPR is one of the essential skills that people of a society have to learn because it is a life-saving skill and can reduce the number of OHCA victims.[13] There has been no previous studies in Chennai concerning awareness of BLS. The participants were chosen from diverse and representative parts of Chennai from among the lay population.

In a study evaluating awareness towards BLS among Iranian medical students, it was found that none of the responders could answer all questions correctly, and none had received any formal training. The awareness of BSL in infants and children was low among participants. Only 7% of participants knew the correct depth of compression during CPR in children and 6.4% in neonates.[14] A study done among medical students in Jordan showed that only 281 (31.7%) had adequate awareness, whereas 605 (68.3%) had inadequate awareness.[15] A similar study in Jordan showed that 29% of the participants had received CPR training, higher than that reported in China (33%)[16] and comparable to data reported elsewhere, including 60% in New Zealand.[17] Reported percentages from other countries, including Australia[18], UK[19],Scotland[20] and the US[21] were higher, with percentages of 56%, 57%, 52% and 79%, respectively. In India the majority of the Studies on BLS awareness was conducted on Medical and Dental students. In one such study the average score of BLS awareness among the study subjects was found to be less than 50%. In another study from South India, the awareness about BLS among students, doctors, and nurses was found to be poor with 84.82% scoring less than 50% marks. Increasing CPR rates have been associated with mandatory training in schools[22] and the World Health Organization–endorsed statement "Kids Save Lives" recommends that annual training from age 12 upward should be mandatory.

Awareness about BLS starts with recognizing the victim and initiating the first step which is ensuring the scene safety. Delaying the initiation of the chain of survival will decrease the survival rate by up to 10% for each minute[23]. So, CPR techniques and quality play a crucial role in saving a life, especially outside the hospital. Being aware of the precise location, rate, depth, and ratio of chest compression and ventilation increases the rate of survival.[24]

When questioned about this 39% had answered to call an ambulance, while 38% gave the response to call other pedestrians, 23% had stated "Ensure the safety of the scene" while nobody had chosen the response "start compressions".

In Our study For the question regarding the rate of chest compressions on an unresponsive victim 47% of the participants answered 100-200/min while 31% had answered 80-100/min, 15% had answered as fast as possible and 7% gave the response "I don't know".

In the question regarding the Compression-ventilation ratio 54% gave the response 30:2, 17% gave the response 15:2, another 17% did not know the rate and 12% had put 15 compression to 1 breath.

Less than half of the participants were willing to do chest compressions on a stranger and almost 90% of them were unwilling to do mouth to mouth ventilation on a stranger among which majority of them were females which shows conservative way of thinking. According to the guideline of the American heart association, if someone does not like to give mouth-to-mouth or is not able to do it, that person should carry out Hands-Only CPR.[25]

From the response we got to know that 81% of the participants had never received any training on CPR and 98% of them think that CPR training should be offered to the public. This shows the willingness among people to learn the lifesaving skill if they were provided with proper training.

This shows that the majority of the population did not have the chance to learn about BLS and training for the same must be provided from childhood in places such as schools and summer workshops. Even basic introduction and workshops in BLS will be useful in improving the ability of the public in recognising people in cardiac arrest and initiating BLS.

CONCLUSION:

Taken together our findings demonstrate that in this study that the awareness level of BLS in the general public is low and because almost all of the

participants were willing to learn about BLS we conclude that BLS training should be included as a part of health awareness programs in PHCs and be taught in a simple basic manner such that even people who did not pass out of school is able to provide BLS

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