SUMMER TRAINING REPORT ON

A Systematic Review of Current Status of Knowledge, Attitude Awareness and Effectiveness of Training About Cardiopulmonary Resuscitation in Different Regions of India

AND

Lean six sigma *'Certified Six Sigma Executive'- Green Belt Level*

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ABSTRACT

Background: Out of hospital Cardiac arrest is the major burning burden in India. Meantime, in the golden hour of OHCA Immediate bystander cardiopulmonary resuscitation (CPR) and rapid defibrillation is the only solution to decrease the incidence and increase the outcome of a chance of survival.in this case, everybody in the community would aware with Basic Life Support(BLS). Therefore, this study aimed at assessing the status of knowledge, attitude, awareness, and to evaluate the effective training intervention about Basic Life Support Skills among school children, students in various fields and health care professionals in different regions of India

Methods: literature was searched from the electronic database of PubMed and Medline about cardiopulmonary resuscitation. Inclusion and exclusion criteria were followed based on PRISMA guidelines for the articles published from 2010 to 2020 in the English language. National Institutes of Health (NIH) and axis quality assessment tools were used to know the quality of the studies.

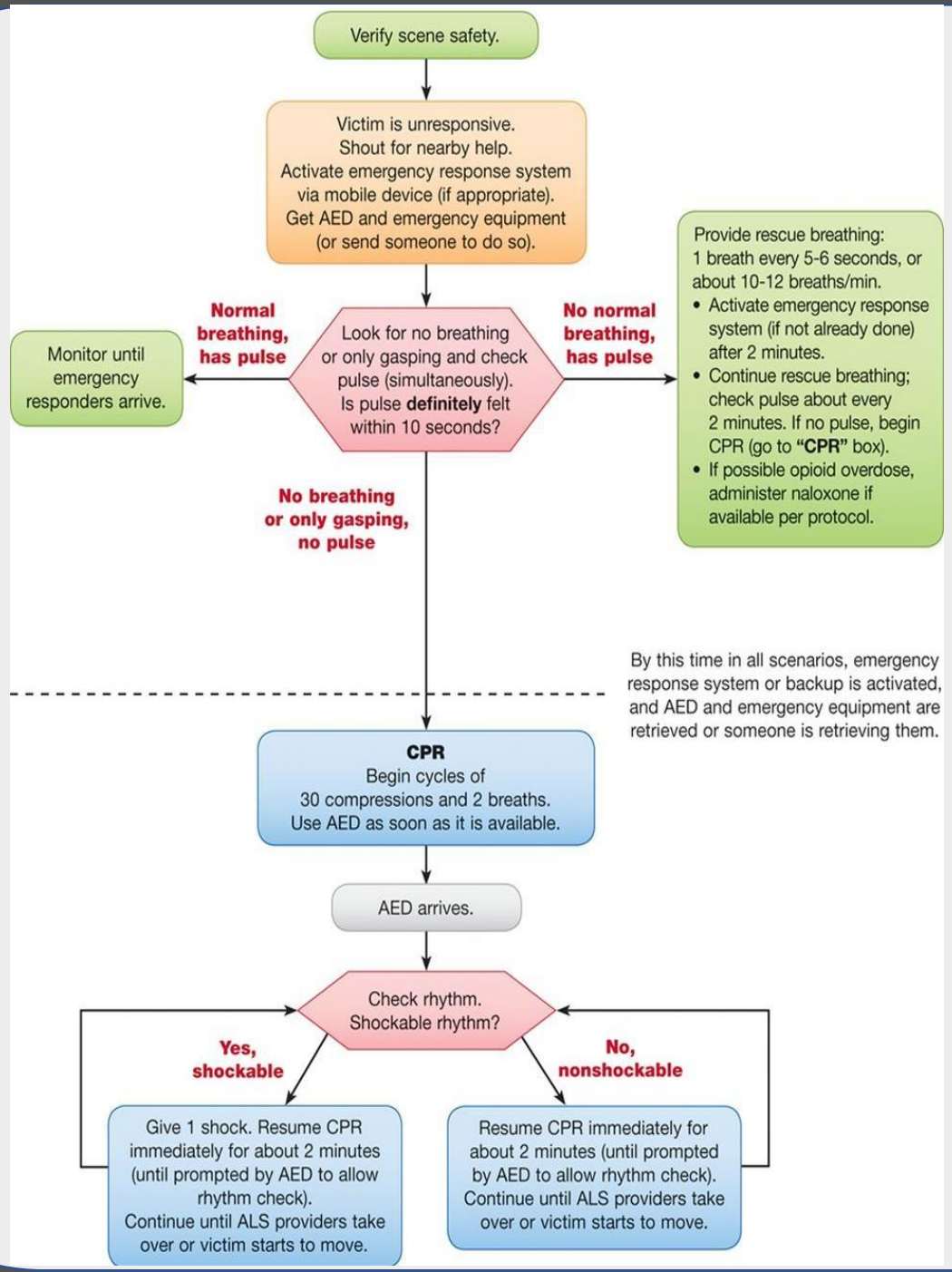
Results: 25 studies were included out of 138 records for the and applied for deep review. Most of the articles shown the poor quality of the publication. Intervention and observation findings identified lack of is basic life support skill is inadequate in every field, alarmingly in healthcare also. Besides, updated knowledge in recent guidelines of BLS was moderate in health care professionals. Besides, updated knowledge in recent guidelines of BLS was moderate in health care professionals. Interventions of training programs on BLS was proved that effective planned training is the only solution to improve the knowledge, attitude, and practices. The most promising interventions involved were interactive sessions in a group with planned teaching programs through live demonstrations by using mannequins to improve the retention level, especially in school children. Most of the studies recommended that Implementation of BLS courses in the academic curriculum with periodic revisions has more influence in School children, college students in different fields. Also, in-service tenure courses for health care workers will aware of recently updated guidelines

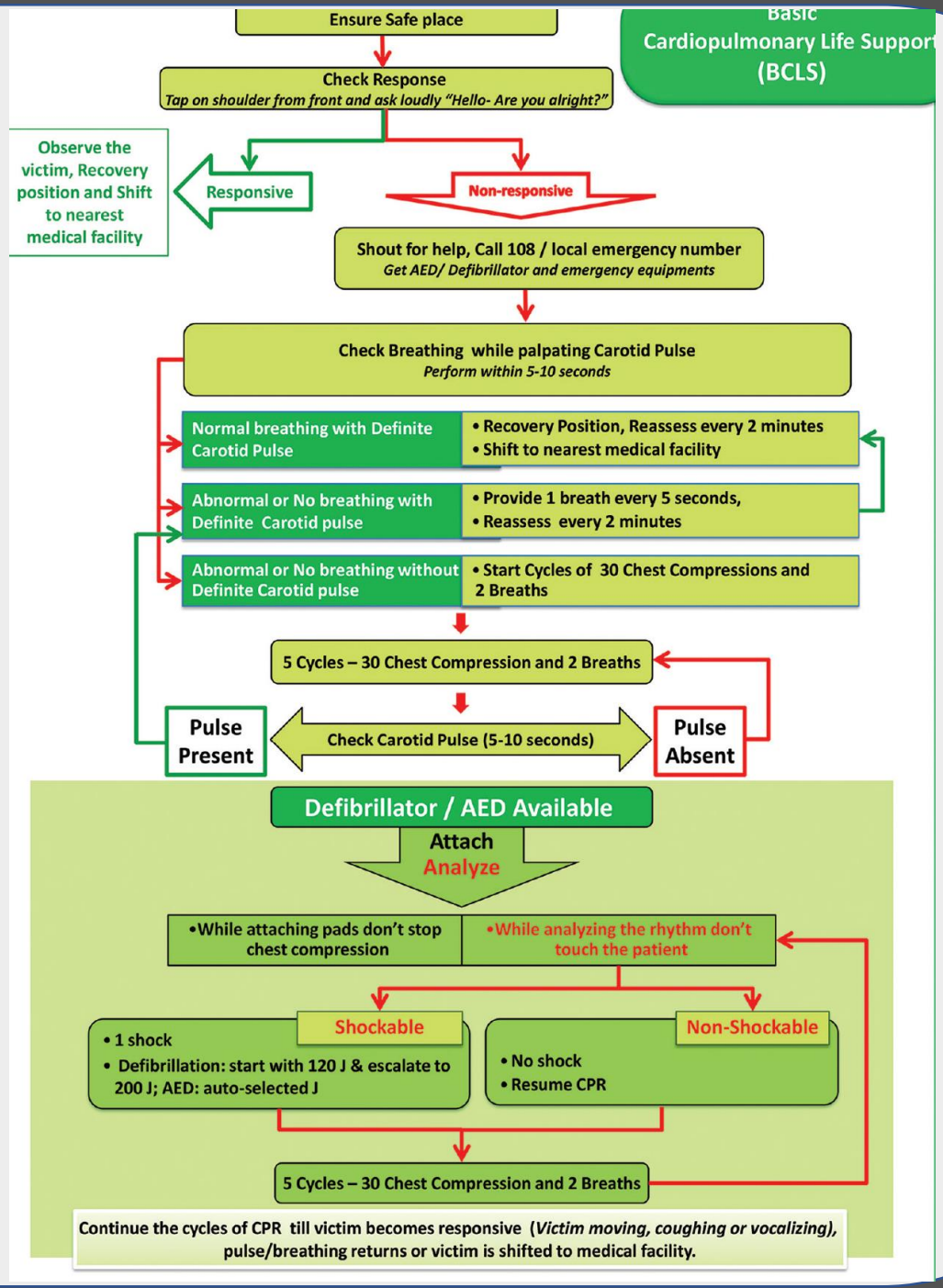
Conclusion: The findings of this review identified that status of knowledge, attitude, awareness is inadequate but effective training on cardiopulmonary resuscitation had more impact on school Children's, students in different fields and health care professional in diverse regions of India

INTRODUCTION

- Globally, sudden cardiac arrest (SCA) is the deadliest disease and Worldwide the burden of the disease is identified as 24 to 186 per 100,000 person-years.
- The burden of the disease is majorly occurred outside of the hospital setting and it is a major concern of health problems around the world.
- OHCA is defined as a cessation of cardiac mechanical activity, confirmed by the absence of signs of circulation the process is potentially reversible, the probability of recovery is small because it occurs outside the hospital setting.
- Out-of-Hospital cardiac arrest (OHCA) cause considerable morbidity, mortality, and a substantial burden on the health care system and are associated with poor survival due to delay in recognition and provision of early cardiopulmonary resuscitation (CPR).
- AED is a portable electronic device, used in the case of cardiac issues, where it will diagnose automatically if any irregularity in the heart's rhythm and send an electric shock to the heart so that the normal rhythm is restored. An untrained person also can use as equally as trained through the voice prompts of the machine.

AHA GUIDELINES





IRC GUIDELINES

EVIDENCE

- ✓ Wassenberg et al Conducted a study in Denmark between 2001 to 2010 to examine the survival rates among OHCA patients after bystander CPR resuscitation. The study revealed that the survival rate with the **bystander CPR is associated with survival on arrival at hospital is increased**

- ✓ Cummins et al observed more than **30% of survival in the bystander-initiated CPR** group of 579 cases over 718 cases who are not received CPR until paramedics arrived

- ✓ Komatsu et al has reported that bystander CPR is a significant pre-hospital contributory factor in the survival and **neurological outcomes in postcardiac arrest syndrome** following OHCA

- ✓ Kari B. Haley Bystanders provide CPR for patients who are not in cardiac arrest at a relatively low frequency. Short-duration bystander CPR caused injury in less than 2% of victims and benefits of bystander CPR for adults who **suddenly collapse outweigh the risk of injury** for those not in cardiac arrest.

- ✓ Yoshihiro Moriwaki concluded that The risk and frequency of complications due **to bystander CPR is thought to be very low.** It is reasonable to perform immediate CPR for unconscious victims with inadequate respiration, and to help bystanders perform CPR using the T-CPR system

SCENARIO IN INDIA

- The burden of cardiopulmonary arrest in India is approximately **4280/100,000.**
- Seventy percent of out-of-hospital cardiopulmonary arrest occurs at home and **90%** of individuals who suffer out-of-hospital cardiac arrest are decease.
- chance of survival is reduced by **7%–10%** due to time delay of resuscitation in OHCA victims
- Regrettably, only about **46%** of people receiving timely instant bystander CPR.
- The chance of survival of victims **can double or triple when the decision making to do of CPR** by witnessed or bystander instantly though it will happen only when the layperson would train the skills of CPR then only witnessed do CPR confidently without hesitating.

- Rajaram et al. reported a bystander rate of **4.4% in OHCA in a study from urban India**. The common reasons for uncertainty and poor knowledge of resuscitation to act when faced with OHCA are *fear of knowledge about the technique, Poor retention of knowledge and skills, Fear of failure, fear of harming the patient, fear of responsibility and fear of infection while mouth-mouth breathing n and lack of confidence, lack of Research standards and Reliable statistics*

- The present study aims to know the **status of knowledge, attitude, awareness, and effective methods of training** about cardiopulmonary resuscitation in various sectors of India. so, this study, will be an insight for training people and policymakers take it more seriously in a healthcare domain and also this study will be necessitated as a resource to reinforce the forthcoming studies to cross all obstacles for implementing life-saving techniques and installation of AED machinery in public places

METHODS

✓ **Search strategy**

PubMed and Medline from 2010 to 2020 in the English language. cardiopulmonary resuscitation (CPR), Automatic External Defibrillator and first aid training

educational training Awareness, attitude, knowledge, practices of CPR, schools, dental, nurses, medical students, practitioners, volunteers, laypersons, degree students.

✓ **Study selection**

subject's cardiopulmonary resuscitation (CPR), Automatic External Defibrillator and first aid training

✓ **Data collection process**

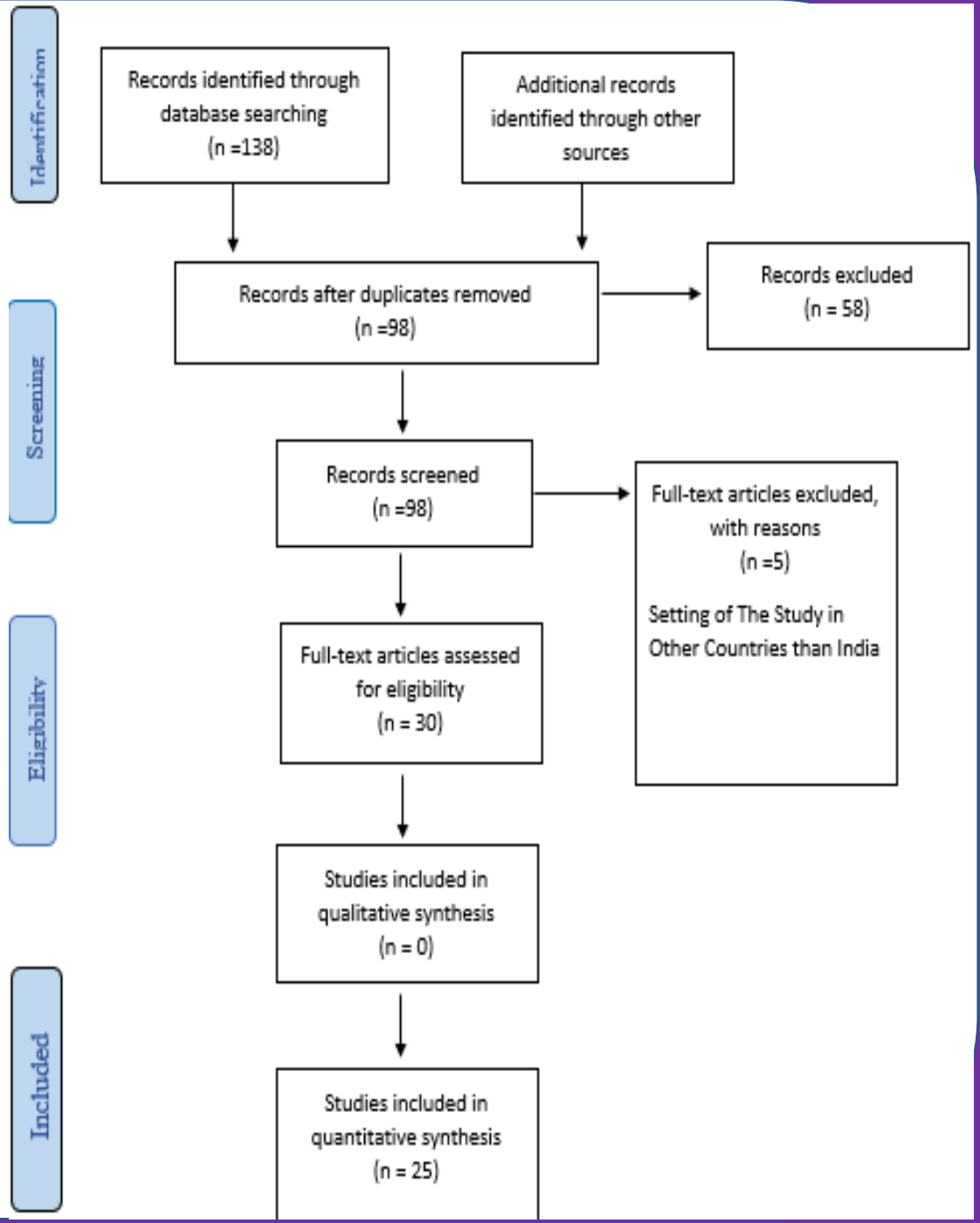
Data extraction form was developed based on observational and interventional. The Information was extracted for interventional studies on (1) author, study site, year (2) type of study, (3) sample size in each field (4) type of intervention,(5) pre and post-training (6) outcome measure and tool used (7) effect.

✓ **Risk of bias and quality of evidence**

The National Institutes of Health (NIH) quality assessment tool for before-after (Pre-Post) study with no control group tool and AXIS appraisal

✓ **Evidence synthesis**

findings were summarised thematically for descriptive analysis



RESULTS

1. Setting

More than half (15/25) of the studies were conducted in the north India i.e. Gujarat(4), Maharashtra(1), New Delhi(2),Rajasthan(2), Punjab(1),Manipur(1),Nepal(1), Odisha(2),Meghalaya(1) and Remaining 10 studies from south India i.e. Karnataka(5),Tamilnadu(3), Andhra Pradesh(1),Kerala(1)

3.2. Quality of evidence

Out Of the 25 studies,19 were observational studies (6 descriptive studies & 11 cross-sectional studies), quality valuation of evidence was good (n = 1), fair (n = 5) and poor (n = 11) and 8 were interventional studies (before and after studies) quality valuation of evidence was good (n =3 2), fair (n = 2) and poor (n = 3).

3.3. Synthesis of findings

studies were too heterogeneous of population, intervention, and effect. So, we did not conduct a meta-analysis. In this point of view, findings were summarised thematically in a narrative manner by dividing the Studies into two themes based on the type of study i.e. Intervention of Planned Training Programme of Basic Life Support Skills for Understanding and Retention & Observation the attitude, awareness, knowledge, perception, and practices of Basic Life Support Skills for School Children, Students in Different Fields, and Health Care Professionals.

Observation the attitude, awareness, knowledge, and confidence of Basic Life Support Skills

- ✓ A Descriptive study (Patidar AB et al)of school children in the ninth standard, identified that compare to male students(52.93 ± 7.98).female students have a more positive attitude towards BLS but lack of confidence in both male and female children due to unawareness of legal actions and fear of mouth to mouth infections

- ✓ Three studies (Bajracharya S et al, Singh R et al, Varughese S et al) identified that there was poor adequate and update knowledge of BLS in nursing staff and confirmed that There was no association between the knowledge and academic qualification or work experience

- ✓ One study(Chaudhari MS et al)Reported that there was very poor knowledge of updated guidelines of BLS among nurses and doctors.

- ✓ 7 studies (Meena Kumari K et al, Chowdari A et al, Akoijam BS et al, Mani G et al, Vausedvan B et al, Yunus M et al, Chandrasekaran S et al) identified that, inadequate knowledge about updated guidelines and had a Positive attitude towards performing CPR. A major proportion of students expressed a lack of awareness and confidence in performing BLS. Depending on the class of semesters, the attitude was varied. Because of no periodic revision of CPR training programs. Moreover, similar results were shown in 5 studies (Reddy S et al, Naram A et al, Sangamesh NC et al, Baduni N et al, Narayan DP et al) conducted in dental students.

Intervention of Planned Training Programme of Basic Life Support Skills for Understanding and Retention

- ✓ Two studies (Dhansura T et al, Stanly S et al) identified intervention in school children studying in standards seven to ten, which increase the proportion of understanding and retention skills with periodic training programs. And observed that post-training the children are more confident towards performing CPR and good retention skills. Intervention which includes emergency preparedness like a simulated sudden cardiac arrest situation like a person fallen in Infront of u in an unconscious situation and to enhance the knowledge, a theoretical lecture also given on chain of survival, correct CPR performance, and application of AED.

- ✓ Jarwani BS et al intervention about CPR was done based on Indian guidelines of COLS for 2 hr session in laypersons of community. It was identified that; attitude is the main consequence because CPR learning is not mandatory in school and college level to train and to resuscitate. Only 5 % laypersons showed ready to perform CPR before training, significantly it was improved to 92% after training showing the great impact on the change of attitude towards performing CPR and improved knowledge of compression rate, depth, and AED operating

- ✓ Goduhan AK et al showed that effective planned group teaching programs (Creating interest by motivating and reinforcing, Live demonstration on a mannequin for CPR, Discussion, Participatory discussion,) were more interactive and to be competent through exchange the views and improve knowledge and skills. During pre-training in 1500-degree students' knowledge and skills on CPR is 1259(poor), 241(good), 0(excellent)After ten days of training program revealed that 32(poor), 803(good),665(excellent)

- ✓ Three studies (Khan H et.al, Ratha K et al, Bhatnagar V et al,)which includes medical UG and PG students, nursing staff and nursing students identified interventions which increase the proportion of knowledge and skills about CPR with planned teaching programs. The intervention involved, standard CPR with rapid defibrillation and use of AED through combined lecture series and hands-on training based on updated guidelines

- ✓ Another study (Tanna D et al) determined high-quality CPR skills needed long-duration hands-on training but for improvement of CPR skills enough of shorter duration and recommended that AHA training is costly, lengthy, and needs more periodic renewals may be the reasons for conducting training. For this reason, the Indian resuscitation council has made CPR guidelines to avoid those issues ‘based on Indian setup. Short duration training with IRC guidelines had enhanced knowledge and skills of doctors

LIMITATIONS

The eligible studies were of poor quality, as found by NIH and AXIS evaluations. Most of the studies were observational studies. Out of twenty-five, only eight were interventional studies remaining studies are observational. Moreover, few studies only follow Indian Resuscitation Council guidelines remaining all studies followed American Heart Association guidelines

CONCLUSION

1. The findings of this review identified that status of knowledge, attitude, awareness is inadequate but effective training on cardiopulmonary resuscitation had more impact on school Children's, students in different fields, and health care professionals in diverse regions of India.
2. This review also suggests that implementing CPR as a regular course from school onwards should do mandatory through forming the legislation. Teaching must be focussed on case-based situations rather than theoretical lectures with the recent guidelines.
3. Meanwhile organizing CPR training programs and health education of cardiac arrest from cities to small villages by the involvement of the government of India engaging with Professional organizations will have a greater impact on public and health professionals. Installation of AED in public places like airports, railway stations, parks, shopping malls should be mandatory with a proper maintenance system.
4. Doctors, Nurses, and Paramedics should have Inservice courses to update their knowledge with current guidelines. In the era of technology and communication revolution, Widespread media campaigns programs on CPR can increase the rate of awareness towards improvement in willingness and confidence among the public to perform CPR of OHCA victims.
5. Also, the Telecommunication system can adapt by the hospitals, to provide emergency medical services through dispatcher service to advice the bystander in initiating CPR. The emergence of these revolutions will change over the current scenario of cardiac arrest in India.

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LEAN SIX SIGMA is a problem solving tool in process and quality improvement or in simple words, improvement methodology for manufacturing process as well as administrative and service applications

1. **Define**: Define the problem and what is required to satisfy your customer.
2. **Measure**: Map the current process to collect data.
3. **Analyze**: Investigate and identify what causes the problem.
4. **Improve**: Implement a fix that will solve the problem.
5. **Control**: Sustain the improved results.

DEFINE	MEASURE
Understanding the Problem Ways to Collect VOC •Classification of VOC –Affinity Diagram •Prioritization of VOC –KANO Model + ISO 13053:2011 •VOC to CTQ –CTQ Drill Down Tree	**What to collect?** •Fishbone Diagram / Ishikawa Diagram / Cause & Effect Diagram •5 Why Analysis (Why-Why Analysis) –Potential Root Cause Identification Introduction to Basic Statistics •Types of data •Measures for Data Analysis
Define the Problem •Project Charter ? •	**How much to collect?** •Sample vs Population •Confidence Interval (Margin of Error) & Confidence Level •Sample size calculations
Understanding the Process •SIPOC / COPIS	**How to collect?** •Sampling Methodology Can I trust the measurement system
Define the Process •As-Is Process Map **Project Management Tools** •Communication Plan,RASIC.	**What is measurement system?** •Equipment Variation –Repeatability •Precision & Accuracy •Operator Variation –Reproducibility •MSA –Gage R & R ANOVA & AAA

ANALYSE	IMPROVE	CONTROL
Calculation of Process Capability •Yield, TPY & RTY •Z Score, Cp/Cpk, Pp/Ppk, DPMO	**. Idea / Solution Generation** •Brainstorming, Subject Matter Expert •Process Flow Diagram •Hypothesis Tests –r, r square, linear equation etc	1.Control Plan 2. Control Charts 3. Lessons Leant Documents Module
7 QC Tools **Introduction to Hypothesis Testing** •Null & Alternate •Types of Error •Hypothesis Tests –Decision Tree	**Screening of Ideas / Solution**	
	Risk Management -FMEA	
	Pilot Testing •Update Action plan & FMEA •Validation of improvement • Cost Benefit Analysis –Full scale improvement approval	

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THANK YOU