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A Pre-Experimental Study to Assess the Effectiveness of Structured Teaching Programme on Knowledge Regarding Cardiopulmonary Resuscitation (CPR) among GNM 2nd Year Students of Desh Bhagat University School of Nursing, Mandi Gobindgarh, Punjab

Ms. Ramanpreet Kaur[1], Dr. Priyanka Chaudhary[2], Nazpreet Kaur[3]

[1]Assistant Professor, [2]Associate Professor, [3]Msc. Nursing,
[1,2,3]Desh Bhagat University School of Nursing, Mandi Gobindgarh, Punjab, India

ABSTRACT

Statement of problem: A Pre-Experimental Study to Assess the Effectiveness of Structured Teaching Programme on Knowledge Regarding Cardio Pulmonary Resuscitation Among Gnm 2nd Year Students of Desh Bhagat University School of Nursing, Mandi Gobindgarh, Punjab.

Material and method: A pre-experimental research design were used for the present study. A study sample of 50 students of GNM 2nd year were selected by non- probability purposive sampling technique. The data was collected by self-structured questionnaire regarding cardio pulmonary resuscitation among BGNM 2nd year students in Desh Bhagat University School of Nursing Mandi Gobindgarh, Punjab.

The data was analyzed in terms of objectives of the study using descriptive and inferential statistics in terms of frequency, percentage distribution, mean, Standard deviation,'t' value, and chi-square.

Results: As per percentage distribution of student according to **age and gender** it was found that Maximum students were in 21yrs (64%) followed by, in 20yrs (20%) in above 21years (12%) and in 19 yrs (4%) included in age group. Majority of students were females (82%) and only (18%) were male students. As per **religion and area of residence** Most of the students were belongs to sikh religion (90%), than (6%) had Hindu and only (4%) had Muslim, Maximum students were living in rural area (72%) and only (28%) were living in urban area.

In post-test maximum number of (70%) the subjects had good knowledge score followed by subjects who had average knowledge score (30%) regarding cardio pulmonary resuscitation. The Knowledge score was calculated by 't' test and the value was 3.42

Conclusion: It was concluded that STP was effective as evidence by the results as the difference between pre-test and post-test knowledge score regarding cardio pulmonary resuscitation. The knowledge and skills of GNM students can be improved through STP after Posttest.

KEY WORDS: *Effectiveness, Structured teaching programme, Cardio pilmonary resuscitation*

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I. INTRODUCTION

"AN UNEXAMINED LIFE IS NOT WORTH LIVING"

-SOCRATES

The heart is the center of cardiovascular system and it is vitally responsible for just about everything that gives 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 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).

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 developed 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".

Resuscitation is a medical word that means "to revive" or bring back to life. Sometimes cardio pulmonary 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 ischemia reperfusion (I/R) injury affecting multiple organ systems including brain and heart. In most cases, defibrillation and other means of advanced life support are not immediately available.

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 bystanders.

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. 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.

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. Recommending that chest compressions be the first step for lay and professional rescuers to revive victims of sudden cardiac arrest, the association said the A-B-Cs (Airway-Breathing-Compressions) of CPR should now be changed to CA-B (Compressions-Airway-Breathing).

For more than 40 years, CPR training has emphasized the ABCs of CPR, which instructed people to open a victim's airway by tilting their head back, pinching the nose and breathing into the victim's mouth, and then giving chest compressions. This approach was causing significant delays in starting chest compressions, which are essential for keeping oxygen-rich blood circulating through the body. Changing the sequence from A-B-C to C-A-B for adults and children allows all rescuers to begin chest compressions right away.

People who handle emergencies such as police officers, firefighters, paramedics, doctors and nurses are all trained to do CPR. Many other teens and adults like lifeguards, teachers, child care workers, and may be even your mom or dad know how to do CPR too. Many people may think you need to get a degree to get a healthcare job, but the truth is many jobs simply require applicants to be CPR and First Aid certified

Courses to receive certification in CPR and First Aid are offered at colleges, technical schools, and Red Cross facilities across the country. This makes getting certified easy and very accessible to anyone. People can get both certifications as young as 16 years of age. This means they can start getting credible work experience at an earlier age, which will only help them out more down the road. And since the courses are so short, it does not have to interfere with high school.

NEED OF STUDY

'GIVE A BREATH, SAVES A LIFE

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 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. 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.

Maximum arrests were because of cardio respiratory arrests. Immediate survivors were 5 out of 6 (83.3%), out of 5 patients only 2 were alive at the end of 24 h (40%), and none of them survived to be discharged. Overall survival to hospital discharge was 3.8% (1.7-13%) of a 3,220 pooled patient group. Analysis of their functional recovery found good outcome in 86.7% (44-89%), moderate impairment in 10.2% (8.5-44%) and severe impairment in 3.1% (2-36%) of survivors from a cohort of 1679 pooled patients. Although, survival from prehospital arrest is diminished in geriatric groups, those who survive often have good functional recovery.

Heart disease is the world's largest killer, claiming 17.5 million lives every year. About every 29 seconds, an Indian dies of heart problem. As many as 20,000 new heart patients develop everyday in India, six core Indians suffer from heart disease and 30 percent more are at high risk. The risk of sudden cardiac death from coronary artery disease in adults is estimated to be 1 per 1,000 adults 35 years of age and older per year. About 75 percent to 80 percent of all out-of-hospital cardiac arrests happen at home. Hence, being trained to perform CPR can make the difference between life and death for a victim.

Each year almost 330,000 peoples die from heart disease. Half of these will die suddenly, outside of the hospital because their heart stops beating. The most common cause of death from heart attack in adult is a disturbance in the electrical rhythm of the heart or ventricular fibrillation. It can be treated by applying an electrical shock to the chest. One way of buying time until a defibrillator becomes available is to provide artificial breathing and circulation by performing CPR.

Over one million heart attacks happen every year and more than 20% of people die before ever reaching a hospital. Latest data shows that cardiac arrest is becoming the number one cause of death. In fact, studies show that 80% of all cardiac arrests happen at home which will most likely be a family member or friend.

Coronary artery disease (CAD) was observed in 66 (38%) and acute myocardial infarction documented in 30 (17%). At least 1 of 3 CAD risk factors – hypertension, diabetes, or smoking was observed in 80.6%. Proportion of subjects with at least one risk factor for CAD was similar in the age groups above and below 50 years (67.6%).

Cardio pulmonary Resuscitation has been used extensively in the hospital setting since its introduction over 3 decades ago. Provision of adequate chest compressions remains a standard of care for optimal outcome in cardiopulmonary arrest. Given the recent changes to CPR rates and a greater emphasis on pushing faster and deeper, this has raised questions surrounding rescuer fatigue and efficacy of compressions. While a body of work has been undertaken on previous CPR rates and associated fatigue levels, there is a shortage of literature on the

latest CPR rates and associated rescuer fatigue in the hospital and prehospital settings

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In 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 receive 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. Knowledge of the likelihood of survival following CPR for subgroups of the hospital population based on prearrest and intra arrest factors can help patients, their families, and their physicians decide with compassion and conviction, in what situations CPR should be administered.

Patients defibrillated at an early stage among the non-monitored patients had a survival rate similar to the corresponding group in monitored areas. Many institutions have a one-tiered defibrillation system, in which defibrillation is delivered once the CPR or ACLS team arrive. The CPR team brings a manual defibrillator with them, or manual defibrillators are placed around the institution so that one can be brought to the scene for use by the advance team. Bystander CPR (comprising airway opening, rescue breathing, and chest compressions: combined with rapid call for ambulance response) improves survival rates from cardiac arrest 2-3 fold.

Various studies suggest that in out-of-home cardiac arrest, bystanders, lay persons or family members attempt CPR in between 14% and 45% of the time, with a median of 32%. Internationally, rates of bystander CPR reported to be as low as 1% and as high as 44%. However, the effectiveness of this CPR is variable, and the studies suggest only around half of bystander CPR is performed correctly. A recent study has shown that members of the public having received CPR training in the past lack the skills and confidence needed to save lives. These experts believe that better training is needed to improve the willingness to respond to cardiac arrest.

In the light of above, the investigator found it is desirable to assess the knowledge and skill in CPR technique among the degree students and also to update the knowledge and improvement in skill. The way to learn CPR is to practice CPR. Educating the students and creating awareness in helping them to learn more about CPR and it help to prevent death occurring due to cardiac arrest. Early initiation of CPR improves the chance of successful resuscitation and survival. **PROBLEM**

STATEMENT

A Pre-Experimental Study to Assess the Effectiveness of Structured Teaching Programme on Knowledge Regarding Cardio Pulmonary Resuscitation (CPR) Among Gnm 2nd Year Students of Desh Bhagat University School of Nursing, Mandi Gobindgarh, Punjab.

OBJECTIVES

1. To assess the pre-test knowledge score on Cardio Pulmonary Resuscitation among GNM 2nd year students in Desh Bhagat University School of Nursing.
2. To assess the post-test knowledge score after implementing the structured teaching programme on knowledge regarding Cardio Pulmonary Resuscitation among GNM 2nd year students in Desh Bhagat University School of Nursing.
3. To compare the pre-test and post-test knowledge score on Cardio Pulmonary Resuscitation among GNM 2nd year students in Desh Bhagat University School of Nursing.
4. To find out the association between pre-test and post-test knowledge score with their selected demographic variables.

OPERATIONAL DEFINITION

- **Effectiveness**: It refers to gain in difference between pre-test and post-test knowledge and skill scores. It is the extent to which an action produces an intended or desired outcome.
- **Structured teaching programme:** It refers to making use of a lesson plan on the knowledge of neonatal resuscitation which the investigator will use to teach the students.

- **Cardio pulmonary resuscitation:** it is a simple technique used to restore and maintain breathing and circulation in cardiac arrest victims.
- **Knowledge:** The sum of what is known regarding cardio pulmonary resuscitation
- **Student:** It refers to 3rd B.Sc. nursing students who are undergoing training in a selected Desh Bhagat University School of Nursing.

DELIMITATIONS

The study will be delimited to:

- The students who are willing to participate in study.
- The students who are present at the time of data collection.

RESEARCH QUESTION

- What is the level of Knowledge Regarding Neonatal Resuscitation Among Gnm 2nd Year Students of Desh Bhagat University School of Nursing, Mandi Gobindgarh, Punjab?

VARIABLES

- Dependent variable: Knowledge Regarding Neonatal Resuscitation.
- Independent variable: Structured teaching programme regarding knowledge of neonatal resuscitation.

HYPOTHESIS

H_1: There will be significant difference between pretest and posttest knowledge score regarding Cardio pulmonary resuscitation among GNM 2nd year students.

H_2: There will be significant association between pretest and posttest knowledge score regarding Cardio pulmonary resuscitation among GNM 2nd year students.

CONCEPTUAL FRAMEWORK

Conceptual framework deals with obstruction that is assembled by virtue of their relevance to a common theme. Conceptual framework broadly presents an understanding of the phenomenon of interest and reflects the assumption and physiological view of the model designs.

Polit and Hungler (1996), defines conceptual framework as ―a cohesive, supporting linkage of selected interrelated concepts. It is the device for organizing ideas and in turn bringing order to related objects, observations, events and experience. It serves as a guide to research and spring board for the generation of research hypothesis. A Conceptual map includes all of the major concepts in a theory or framework.

General system theory, therefore, is a general science of wholeness... The meaning of the somewhat mystical expression, "The whole is more than the sum of its parts" is simply that constitutive characteristics are not explainable from the characteristics of the isolated parts. The characteristics of the complex, therefore, appear as new or emergent... - Ludwig von Bertalanffy.

It addresses the knowledge of individuals, it consists of 3 components

- Input
- Throughput
- Output

The present study aims to Assess the Effectiveness of Structured Teaching Programme on Knowledge Regarding Neonatal Resuscitation Among Gnm 2nd Year Students of Desh Bhagat University School of Nursing, Mandi Gobindgarh, Punjab.

Input: Input is something put into a system or expended in its operation to achieve output or a result. Input can also be thought of as a form of feedback.

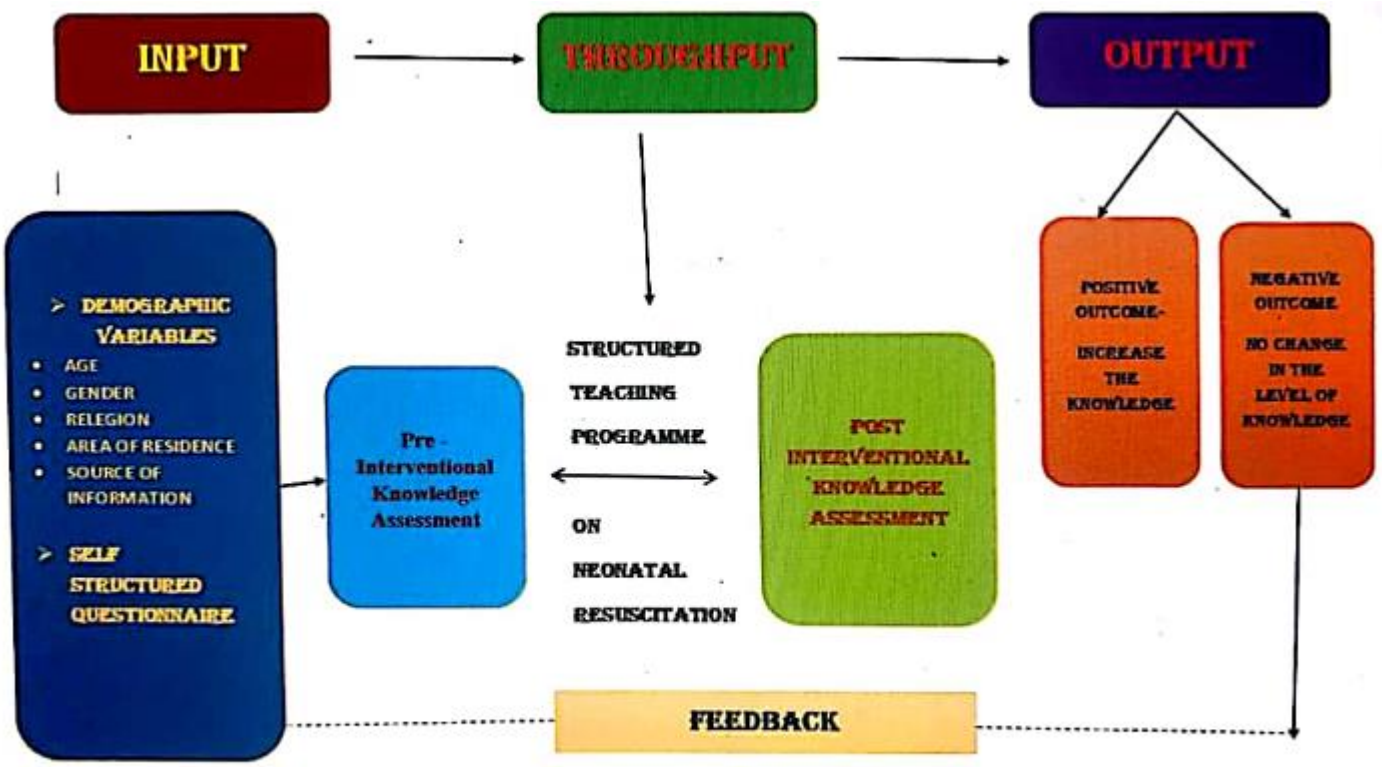
In this study input refers to the assessment of pre interventional knowledge regarding neonatal resuscitation. Thus, it is assessed through demographic tools i.e. the age, gender, religion, marital status, education, type of family and monthly income. Secondly it is also assessed through self-structured quesnnaire. These variables are represented under the input heading.

Throughput: Processing positive and negative input to adjust to environmental change is called throughput. In the throughput of information, the organization analyzes it and tailors it strategically to fit with the organization's goals, values, and within the relationship context it holds with publics.

In this study throughput refers as implementing structured teaching programme on neonatal resuscitation to enhance the knowledge. These variables are represented under the Throughput heading.

Output: it is the information produced by a system or process from a specific input. Within the context of systems theory, the inputs are what are put into a system and the outputs are the results obtained after running an entire process or just a small part of a process.

In this study output refers to the assessment of knowledge after implementing structured teaching programme on neonatal resuscitation to assess the enhancement in level of knowledge. Output is assessed as positive or negative response in knowledge enhancement. Positive outcome shows increase in knowledge regarding neonatal resuscitation. Negative outcome shows no change in level of knowledge.



Conceptual Framework Based on General System Theory Of "Ludwig Von Bertalanffy"

SUMMARY

This chapter includes introduction, need of the study, problem statement, objectives of the study, operational definition, delimitations, research questions, hypothesis of the study and conceptual framework-based system theory of Ludwig Von Bertalnaffy.

II. REVIEW OF LITERATURE

K. Tamizharasi, Nisha Joshi (2020) conducted a pre-experimental study to Evaluate the effectiveness of Structured Teaching Programme on knowledge and skill regarding basic cardiac life support among basic B.Sc. (N) 1st year Students at Dehradun, Uttarakhand. A sample of 50 students were selected through convenience non-probability sampling technique. The data was collected through self-structured knowledge questionnaire and skill checklist on basic cardiac life support. The tool was developed in three parts, the first part deal with the 7 demographic variable, the part two consist of 32 knowledge questions on basic cardiac life support and the third part consist of 18 steps of skill checklist. This concludes that the structured teaching program was effective in significant improvement of knowledge level and skill score regarding basic cardiac life support among study participants. Findings stress the need for such teaching and skill programs, which in turn may enhance the overall health standard and save the life of victims.

Prateeksha Gurung, Salakha Mishra, Kavita Chandrakar (2020) conducted a Pre-Experimental Study to Assess the Effectiveness of STP on Knowledge Regarding Cardiopulmonary Resuscitation among B.Sc. Nursing Students among the degree students Dayananada Sagar College of Nursing Sciences, Bangalore. Study was conducted on 30 B.Sc Nursing student selected by random sampling.. Tool prepared consisted of demographic variables & self-structured knowledge questionnaire regarding Cardiopulmonary Resuscitation. The present study showed that the level of knowledge of student nurses revealed that 73.33% of students had inadequate knowledge, 26.66% had moderate knowledge in the pre-test whereas after administration of STP, 43.33% had inadequate knowledge,40% had moderate knowledge and 16.67% had adequate knowledge in the post-test. Hence, there was a statistically significant difference between pre-test and post-test level of knowledge regarding Cardiopulmonary Resuscitation among the students at the level of $p<0.05$.

D. Ravivarman, K. Kamala (2020), conducted a Quantitative pre-experimental Study to Assess the Effectiveness of Structured Teaching Programme on Knowledge Regarding Basic Life Support among First Year Undergraduate Nursing Students. First year 59 undergraduate Nursing students were chosen by Purposive sampling technique. The data were collected by using demographic proforma and self-

structured knowledge questionnaire. Pre-test and post- test knowledge scores revealed that during pre-test, the mean score 8.6±3.07 (SD) which is 43% of the total mean score, whereas in post-test, the mean score was 15.13 ± 2.26(SD) which is 75.65% of the total mean score depicting difference of 32.65% increase in mean percentage of score.

Marilyn H. Oermann et.al (2020) conducted a study on Training interval in cardiopulmonary resuscitation lthough evidence supports brief, frequent CPR training, optimal training intervals have not been established. The purpose of this study was to compare nursing students' CPR skills (compressions and ventilations) with 4 different spaced training intervals: daily, weekly, monthly, and quarterly, each for 4 times in a row. Participants were nursing students (n = 475) in the first year of their prelicensure program in 10 schools of nursing across the United States. They were randomly assigned into the 4 training intervals in each of the schools. Results was Although students were all certified in Basic Life Support prior to the study, they were not able to adequately perform compressions and ventilations at pretest. Overall compression scores improved from sessions 1 to 4 in all training intervals (all $p < .001$), but shorter intervals (daily training) resulted in larger increases in compression scores by session 4. There were similar findings for ventilation skills, but at session 4, both daily and weekly intervals led to better skill performance.

Shalu Saju, Chandrashekar (2020), conducted A quasi-experimental Study to Assess the Effectiveness of Structured Teaching Programme on Knowledge and Skill Regarding Cardiopulmonary Resuscitation in Children among 3rd Year B.Sc. Nursing Students of a Selected College of Nursing at Mangaluru. Simple random technique was used to select 30 subjects. After the pre-test and assessment of skill and knowledge by observational check list and questionnaire, a STP was administered and CPR demonstrated to the subjects and on the seventh day post-test was conducted with the same questionnaire and observational checklist. Results of the study is the mean post-test knowledge scores obtained by the subjects (30.16) were higher than the mean pre-test knowledge scores (17.13). The mean post-test skill scores obtained by the subjects (16.03) were higher than the mean pre-test skill scores (7.6). Findings of the study showed that the knowledge score and skill score of the III-year BSc students were very less before the introduction of STP and demonstration of CPR. The enhanced them to gain more knowledge and demonstration enhanced them to gain more skill regarding CPR. Hence, STP and demonstration of CPR was an effective strategy for providing information and to improve knowledge and skill of student nurses, which was well appreciated and accepted by student nurses.

Jaskiewicz et.el (2020) conducted a observational study on Chest compressions quality during sudden cardiac arrest scenario performed in virtual reality Potential attributes of virtual reality (VR) can be a breakthrough in the improvement of sudden cardiac arrest (SCA) training. However, interference with the virtual world is associated with the need of placing additional equipment on the trainee's body. 91 voluntarily included in the study medical students participated twice in the scenario of SCA – Traditional Scenario (TS) and Virtual Reality Scenario (VRS). In both cases two minutes of resuscitation was performed. Virtual reality can be a safe and highly valued by medical students, method of hands-on CPR training. However additional VR equipment placed on the trainee's body may cause chest compressions harder to provide. If it is not preceded by traditional training, the use of VR may have an adverse impact on depth and full chest relaxation during the training. To make the best use of all the potential that virtual reality offers, future studies should focus on finding the most effective way to combine VR with traditional skill training in CPR courses curriculum.

Abhishek Kumar (2020) publish an article on Cardiopulmonary Resuscitation: Recent Advances, Cardiac arrest is the most significant reason for mortality and morbidities worldwide. With a better understanding of the pathophysiology of cardiac arrest, simple adaptations in basic life support to upcoming modifications in post-resuscitation care have been proposed by various resuscitation councils throughout the globe. Role of point of care cardiac ultrasound during cardiopulmonary resuscitation (CPR) has been explored and its contribution for identifying reversible causes and its real time management has been explored. A higher blood and tissue oxygenation levels contributed to an increased rate of return of spontaneous circulation (ROSC) which has to lead us to explore more options to increase the oxygenation. Starting from the CPR training, the use of sensors for spirometric feedback in ventilation maneuvers can help improve the quality of CPR. High flow nasal oxygenation during CPR has shown promising results. Extracorporeal CPR is another entity that has shown survival benefits in a selected group of patients. The aim of the newer advances has always been to decrease the morbidity and improve survival outcomes in terms of neurological deficit as well. These guidelines are

reviewed and updated regularly to improve knowledge and training based on the current evidence. This chapter shall focus on recent advances in cardiopulmonary resuscitation.

Sanela Pivač et.al (2020) conducted a study on the impact of cardiopulmonary resuscitation (CPR) training on schoolchildren and their CPR knowledge, attitudes toward CPR, and willingness to help others and to perform CPR: mixed methods research design. Research was conducted in 15 Slovenian public elementary schools offering cardiopulmonary resuscitation training. Data was collected with a structured questionnaire. The sample included 764 schoolchildren aged 12.5–14.5 years before cardiopulmonary resuscitation training and 566 schoolchildren after training. Results of study was Significant progress in cardiopulmonary resuscitation knowledge was noted after training implementation, with the greatest progress seen in the youngest age group (mean age 12.5). The greatest increase after training was seen for the variables Attitude toward helping others ($p = 0.001$) and Self-confidence ($p = 0.001$).

Alaa O Oteir et.al (2019) conducted a cross sectional study on Cardiopulmonary resuscitation level of knowledge among allied health university students in Jordan. 20 participants were selected. The survey had two sections, including demographics and knowledge questions. A total of 883 students completed the surveys and were included in the study. The mean age was 21 years (±1.6) and the majority were females (73.1%). A total of 693 (78.5%) students did not receive previous CPR training and the top barriers to receiving CPR training were unawareness of training opportunities and a lack of time. Participants had a mean CPR knowledge score of 3.9 (±1.7) out of 10 maximum potential points. Trained participants had a higher mean score compared with the untrained (4.6 (±1.6) vs 3.8 (±1.6), p<0.001). Previous training (adjusted β=0.6; 95% CI 0.2 to 0.9; p<0.001) and being in the physical therapy programme (adjusted β=0.5; 95% CI 0.1 to 0.8; p=0.01) were associated with higher knowledge. **Conclusion** of the study is There is poor knowledge of CPR among AHP students including trained individuals. Efforts to increase the awareness of CPR should target students and professionals who are highly likely to encounter patients requiring CPR. Compulsory training courses, shorter training periods as well as recurrent and regular refreshing courses and use of various media devices are recommended.

Abdulmajeed Owaid Alsharari et. Al (2018) conducted a cross sectional study on Current Status of Knowledge about Cardiopulmonary Resuscitation among the University Students in the Northern Region of Saudi Arabia. A self-administered questionnaire was prepared. Result of the study was total of 947 students from four universities completed the questionnaire: Jouf (57%), Hail (15%), Northern Borders (13%), and Tabuk (15%). Although 72% of students have previous knowledge about CPR, 49% of them lack knowledge about a medical emergency. Moreover, 59% failed to answer regarding CPR where only 41% wrote the ABC steps in the correct sequence. However, 67% of the participants had very poor knowledge, 89% of participants desired to receive additional CPR training course, and 49% of the students thought that CPR training should be a mandatory graduation requirement for all universities. There were no significant differences between male and female students. Students from medicine-related colleges have significantly () more knowledge and scored better compared with non-medicine-related colleges. Tabuk University scored better compared to the others, but the overall knowledge and attitude scored were low.

Subramaniyan (2018) conducted A quasi-experimental Study to Assess the Effectiveness of Structured Teaching Programme on Knowledge Regarding Newborn Resuscitation among Staff Nurses in Selected Hospital. Non-probability purposive sampling technique has been adopted to select the 30 staff nurses. The data was collected through a structured questionnaire. Paired 't' test was used to evaluate the effectiveness of teaching programme on level of knowledge among staff nurses. The obtained 't' value was 18.04. The findings of the study revealed that structured teaching programme helps in improving the knowledge regarding newborn resuscitation among staff nurses.

Vijayaraddi Vandali et.al (2018) conducted a descriptive study to assess the knowledge regarding Cardiopulmonary resuscitation (CPR) among 1st Year GNM (diploma nursing students) students studying in SND College of nursing with a view to develop an information booklet. 50 samples were included in the study who all are fits in inclusive criteria. The finding clearly shows that there is no one student had poor knowledge regarding CPR among the 1st year RGNM students. There is 38% of adequate knowledge regarding CPR and the majority of 62% students having good knowledge about cardiopulmonary resuscitation (CPR). No one students of diploma nursing (GNM) belongs to nil knowledge regarding CPR. The study concludes that the GNM students required more knowledge and skill regarding CPR to practice effectively to save life of a victim. Even though majority of the GNM (diploma

nursing students) had good knowledge but still perfection is required to practice it whenever needed in emergency.

Mutlu Vural et.al (2017) conducted a study on Cardiopulmonary resuscitation knowledge among nursing students: a questionnaire study. The questionnaire comprised of three parts about CPR knowledge: the first dealing with general questions to understand the importance of CPR in clinical practice; the second comprising the main goal and accuracy of CPR intervention; and the last consisting of questions targeting the indications, methods, and effectiveness of CPR. Results of the study was students had good knowledge about the importance of CPR in clinical practice and stood average in knowing its indications and effectiveness. 11% of them were completely aware about the universal compression ventilation ratio, 16.2% were aware of the current compression depth. In addition, 21.8% of participants have only indicated the order of CPR being compression, airway, and breathing. Conclusion of the study is Knowledge of CPR is good among the nursing students. However, skills of CPR have to be improved by current training programs at regular intervals. Their knowledge and practical approach have to be updated with the current guidelines in CPR.

Kaur Rajwinder, Jangwal Lalita, (2016) conducted a pre-experimental study to assess the effectiveness of Structured Teaching Programme regarding Neonatal Resuscitation among G.N.M Interns students in selected Nursing College, Jalandhar, Punjab. The sample comprised of 60 G.N.M Interns by using convenience sampling techniques. The result showed that the mean post-test knowledge score (24.37) was higher than the mean pre-test knowledge score (13) and find to be non-significant with the calculated `t` value of pretest and posttest (pretest-0.885 and posttest-0.750).

Pradhan Rubi et al. (2016) conducted a study on effectiveness of video assisting teaching module on knowledge regarding Neonatal Resuscitation protocol as per NSSK guidelines of staff nurses in IMS and SUM Hospital, Bhubaneswar, Odhisa. The sample comprised of 40 staff nurses by using non-Probability convenient sampling technique. The study result revealed that mean post-test knowledge score (17.92) was higher than mean pre-test knowledge score (13.17).

Aswathi Vijayan, Vetriselvi, Adhisivam (2015), conducted a quasi-experimental study effect of structured teaching programme on knowledge and skills on neonatal resuscitation among the nurses of Jipmer, Puducherry. Population of the study comprise of all nurses working in the Paediatric and Obstetrics and Gynaecology departments. Convenience sampling technique was used to select 120 samples, 60 in the experimental group and 60 in the control group. Non standardized self-structured self-administered multiple-choice questionnaire (Demographic Proforma, Structured knowledge questionnaire, Observation Checklist) was used to collect data. Results of the study was a highly significant difference in the knowledge and skills of nurses regarding neonatal resuscitation between the experimental and control group at P<.001 level. The study concluded that structured teaching programme is an effective method to increase knowledge and to promote the skills of nurses relating to neonatal resuscitation.

Aswathi Vijayan, et al. (2015) conducted a descriptive study to assess the effect of structured teaching programme on knowledge and skills on neonatal resuscitation in obstetrics and gynaecology departments of JIPMER hospital. A sample comprised of 120 staff nurses out of which, 60 was in experimental group and 60 was in control group were selected by convenience sampling technique. The result revealed that there was a significant difference in the knowledge and skills of nurses regarding neonatal resuscitation between the experimental and control group at P<.001 level.

Nimbalkar Archana et al. (2015) conducted a study on Randomized control trial of high-fidelity vs low fidelity simulation for training undergraduate students in Neonatal Resuscitation. The sample comprised of 101 undergraduate students. The study result revealed that there was no significant difference in the improvement between both the groups with respect to written exam (p=0.38) or megacode assessment (p=0.92).

Shilpa G.S, et al (2014) conducted a descriptive study to assess the student's knowledge on Neonatal resuscitation in selected Nursing College at Bangalore. The sample comprised of 100 nursing students by using non probability purposive technique. The result revealed that (69%) had average knowledge regarding (60.50%) had adequate knowledge on meaning structure and functions regarding neonate 0.36% had knowledge on initiation step of neonatal resuscitation technique and (35.50%) had adequate knowledge regarding applying chest compression during neonatal resuscitation.

Waffa Elarocis et al. (2014) conducted a descriptive study to assess the effectiveness of e-learning in enhancing neonatal resuscitation skills, knowledge and confidence of undergraduate Nursing students at king squad Bin-Abdul-Aziz University for Health

Science College of Nursing, Jeddah. The sample comprised of 40 undergraduate students who registered for Paediatric course Nursing. The result revealed that the Nursing students of the experimental group were more skillful and had more knowledge about neonatal resuscitation than the nursing students of the control group and the difference were not statically significant.

Benazeeraet et.al (2014) conducted a study on assessment of student's knowledge on neonatal resuscitation. The sample comprised of 100 nursing students. The study result revealed that **(**69%) were had average knowledge regarding neonatal resuscitation, (60.50%) were had adequate knowledge on meaning structure and functions regarding neonate, (50.36%) were had knowledge on initiation step of neonatal resuscitation technique and (35.50%) were had adequate knowledge regarding applying chest compression during neonatal resuscitation.

Thomas saj et al. (2014) conducted a study to assess the video assisted teaching knowledge and skill regarding neonatal resuscitation among final year pharmacy diploma students at KCT'S Krishna college of pharmacy kharad. The sample comprised of 58 students was conducted by using non probability convenient purposive sampling technique. The study result revealed that pre-test data depicts the majority of students 38(65.52%) had poor level of knowledge about resuscitation, whereas 20 (34.48) of students have good level of knowledge and none 0(0%) of had excellent knowledge regarding neonatal before administration of VAT.

Archna Mourya et al. (2013) conducted a study to assess the effectiveness of simulation teaching on neonatal resuscitation skill procedure among nursing students at SRMM College of nursing DMIMS, Maharashtra, India. The sample comprised of 50 post basic B.Sc. 1st year students were selected by random sampling technique. The study concluded that the study group (simulation group) increased the posttest knowledge score and psychomotor score of nursing students on neonatal resuscitation the simulation teaching was more effective for nursing students. The use of simulation and skills rehearsal as a vehicle for increasing opportunities for students to families themselves with skills before rehearsing and consolidating these skills in practice.

Surcouf Jeffrey W et al. (2013) conducted a study on enhancing residents neonatal resuscitation competency, through unannounced simulation on based training New Orleans. The sample comprised of 60 students. The study result revealed that the correlation between live and video-based assessment were strong for pre-post training scenario performances (pre r=0.64, p<0.0001, post r= 0.75, p<0.0001).

Mark Thompson, et al. (2012) conducted a comparative study to assess the effectiveness of video-assisted debriefing versus oral debriefing alone for improving neonatal resuscitation performance at Chung Ang University, Seol, South Korea. The sample comprised of 30 students each divided into 15 teams consisting 2 members. Data was collected by randomized technique. The result revealed that overall neonatal resuscitation performance scored improved in both 83% for pre-test vs. 91% for oral post-test, 81% for video pre-test vs. 93% for video post-test.

Mohammed Abdelallah et al. (2012) conducted a study to check the effect of simulation training on Nurses and Inter Nursing students' skill confident and satisfaction regarding neonatal resuscitation in faculity of Nursing, Benha University. The sample comprised of 35 nurses and 25 Inter nursing students. The result revealed that the nurses were higher in skill confident and satisfaction than inter nursing students.

O Lee Moon al ed. (2012) conducted a study on a medical simulation based educational intervention for emergency medicine residents in neonatal resuscitation. The sample comprised on of 50 students were selected by using non probability convenient sampling technique. The study result revealed that medical simulation can be an effective tool assess the knowledge and skills of emergency medicine residents in neonatal resuscitation.

III. MATERIALS AND METHODS

Research methodology is the science dealing with the principles of procedure in research study. It is the section of a research proposal in which the methods like the research design, the population to be studied and the research instrument, or tools are to be described. The method of research indicates the general patterns of organizing the procedure for gatherings valid and reliable data for the purpose of investigation. **-(Kothari C.R.,2007)**

Research methodology involves the systematic procedure by which researcher starts the initial identification of problem to its final conclusions. It indicates the general pattern for organizing the procedure for gathering valid and reliable data for investigation.

The methodology is the most important in research as it is framework for conducting the study. The present study was carried out to assess the effectiveness of Structured teaching programme on knowledge regarding Cardio pulmonary Resuscitation among

GNM 2nd year students in Desh Bhagat University School of Nursing.

This chapter includes following contents:

- Research Design
- Research Settings
- Target Population
- Sample and Sampling Technique
- Inclusion and Exclusion criteria
- Selection and Development of tool
- Description of tool
- Phases of research methodology
- Pilot study
- Validity of tool
- Criterion measurement
- Data collection procedure
- Ethical consideration
- Plan of data analysis
- Expected outcomes

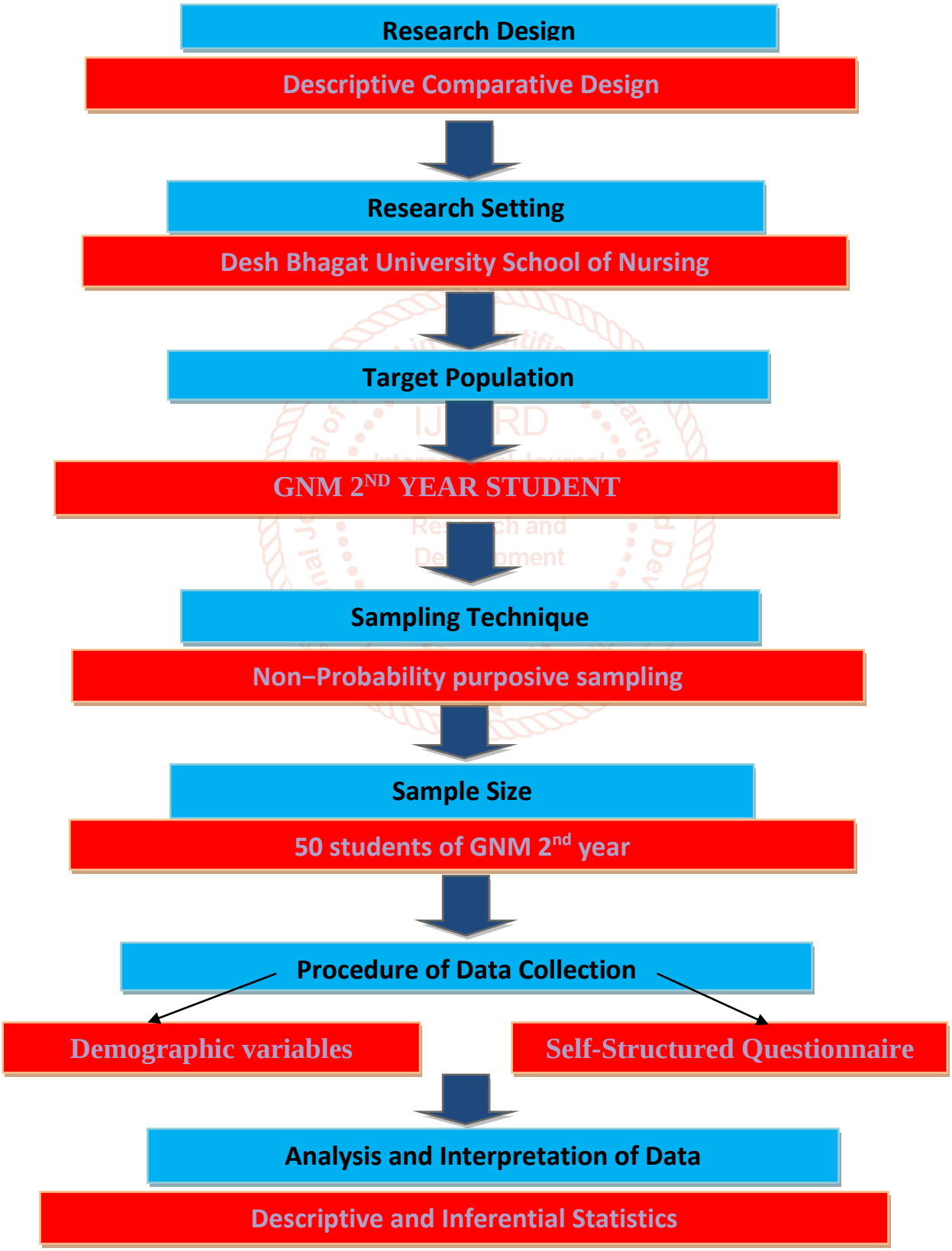


Figure 2: Schematic representation of research methodology

RESEARCH DESIGN

Polit and Beck (2011) state that a design is the overall plan for obtaining answers to research questions or for testing research hypothesis.

A pre-experimental research design with **one group pre-test and post-test** was used to assess the effectiveness of STP on knowledge regarding cardio pulmonary Resuscitation among GNM 2nd year students in Desh Bhagat University School of Nursing.

O_1 ———— X ———— O_2

The symbols used are explained as follow:
O_1 = Pre- test on knowledge regarding cardio pulmonary Resuscitation among GNM 2nd year students.
X = Implementation of knowledge regarding cardio pulmonary Resuscitation among GNM 2nd year students.
O_2 = Post-test knowledge regarding cardio pulmonary Resuscitation among GNM 2nd year students.
E = Effect of STP regarding cardio pulmonary Resuscitation.

RESEARCH SETTING OF THE STUDY

Polit and Beck (2011) state that the physical location and conditions in which data collection takes place in a study is setting of study.

The research study was conducted at Desh Bhagat University School of Nursing, Mandi Gobindgarh.

VARIABLES

Pilot and Beck (2011) state that a variable is a quality of an organization group or situation that takes different values (i.e., varies from one person to another)

Independent variable

- An independent variable is that which is believed to cause or influence the dependent variable.
- In this study, the independent variable s refers to Structured teaching programme regarding knowledge of cardio pulmonary resuscitation.

Dependent variable

- Dependent variable is the response due to the effect of the independent variables, which researcher wants to predict or explain.
- In this study, Knowledge Regarding cardio pulmonary Resuscitation is dependent variable.

TARGET POPULATION

A target population consists of the total number of people or objects which are meeting the designated set of criteria. **(S.K. Sharma, 2011)**

The population under the study was GNM 2nd year nursing students of Desh Bhagat University School of Nursing. Once the eligibility of sample was established, written informed consent was obtained from students.

SAMPLING TECHNIQUE

Sampling is the process of selecting a representative segment of the population under study. **(S.K. Sharma, 2011)**

The sample was drawn by using non-Probability purposive sampling technique.

SAMPLE SIZE

Sample consists of a subset of units which comprise the population selected by investigators or researchers to participate in their research project.

(S.K. Sharma, 2011)

A total sample size was 50 students of GNM 2nd year students from Desh Bhagat University School of Nursing.

SELECTION AND DEVELOPMENT OF THE TOOL

The most important and indispensable part of conducting research data is to collect the relevant data to answer the queries raised in problem statement. Beside this expert from the field of child health nursing have been consulted to construct appropriate tool for the purpose of data collection.

DESCRIPTION OF TOOL

As a study is concerned with effectiveness of STP on knowledge regarding cardio pulmonary Resuscitation among GNM 2nd year students in Desh Bhagat University School of Nursing.

TOOL I: STRUCTURED DEMOGRAPHIC SHEET

This section contains question on demographic information of i.e., age, gender, religion, area of residence, source of information of cardio pulmonary resuscitation.

TOOL II: SELF STRUCTURED KNOWLEDGE QUESTIONNAIRE

It contains 30 closed ended questions to assess the knowledge regarding cardio pulmonary resuscitation of GNM 2nd year students on following aspects:

1. Definition of cardio pulmonary Resuscitation.
2. Indications and components of cardio pulmonary Resuscitation.
3. Steps of cardio pulmonary Resuscitation.

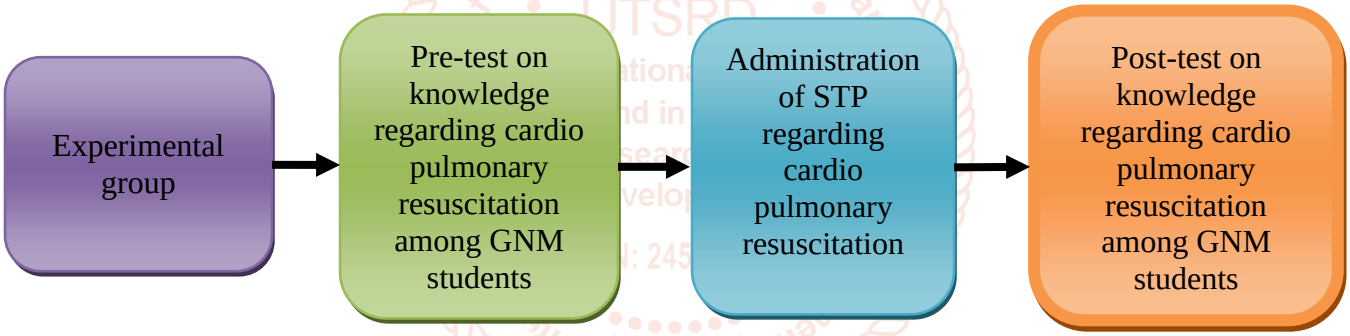
Criterion measures for self-structured knowledge questionnaires regarding Cardio Pulmonary Resuscitation.

Sr. No.	Level of Knowledge	Score
1.	Good	21−30
2.	Average	11−20
3.	Below Average	1−10

The STP was one educational session duration of session was 30 minutes to 40 minutes. In this session STP was given on following aspects of cardio pulmonary resuscitation definition and indications, components, equipment, and steps of cardio pulmonary Resuscitation.

METHOD OF DATA COLLECTION

Data was collected through self-structured knowledge questionnaire and self-structured observational checklist. The steps of data collection were as follow:



Step 1−Obtained written permission from the students
Step 2− GNM 2nd year Students from Desh Bhagat University School of Nursing.
Step 3 –All the selected Students were given pre-test.
Step 4 –Implemented STP to the students.
Step 5 –Posttest was taken 7 days after implementation of the STP.

VALIDITY OF RESEARCH TOOL (S)

Validity refers to the extent to which an instrument accurately reflects the abstract construct (or concept) being examined. **(S.K. Sharma, 2011)**

The research tool was validated as follows

- Research supervisor and co-supervisor were consulted regarding the content and language of the research tool.
- Experts from the field of medical surgical nursing & child health nursing were consulted to improve the short comings in the research tool.

RELIABILITY OF RESEARCH TOOL (S)

Reliability refers to the extent to which an instrument consistently measures a concept: three types of reliabilities are stability, equivalence and homogeneity

(S.K. Sharma, 2011)

- The reliability of closed ended questionnaire was tested by test re-test method. Karl-Pearson correlation coefficients a formula was used for estimation of reliability of close ended questions. The research tool was found to be reliable (r=0.7)

$$r = \frac{\sum XY - \frac{\sum X \sum Y}{N}}{\sqrt{(\sum X^2 - \frac{(\sum X)^2}{N})(\sum Y^2 - \frac{(\sum Y)^2}{N})}}$$

PILOT STUDY

The pilot study is miniature trial run of the methodology planned for the major research study, which facilitates to improve the methodology of the study can assess the feasibility of the study and may identify the problems that may be faced by the researcher in actual large research project.

It was conducted on 1/10th of total population. Total 10 students who were studying in Ajit College of Nursing in Sunam were taken. Pre-test and post-test were conducted in gap of 7 days. It was conducted to assess the feasibility according to time, money and other resources.

PLAN FOR DATA ANALYSIS

The collected data was planned to be analyzed based on the objectives of the study by using descriptive statistics i.e. mean, percentage (%) and standard deviation and inferential statistics i.e. paired t-test, chi- square test. The findings of the study are presented in the form of tables and figures.

EXPECTED OUTCOME

- The study had enhanced the knowledge regarding cardio pulmonary Resuscitation among GNM 2nd Nursing students.
- The study had helped to reduce the mortality.

POLICY RELEVANCE

- Ethical approval of study was obtained from ethical committee of university.
- Written consent was taken from the students.
- Confidentiality of subjects was maintained throughout the study.
- The students were having autonomy to participate in research and withdrawal from research at any time.

SUMMARY

This chapter dealt the research methodology adopted for the study it includes the research design, research setting, target population, sampling technique, sample size, development of tool, description of tool, method of data collection, content validity if tool, reliability of tool pilot study, plan for data analysis, expected outcomes and policy relevance.

IV. RESULTS

Analysis and interpretation of data is the most important phase of research process, which involves the computation of certain measures along with searching for patterns of relationship that exist among the data group. Data collection is followed by analysis and interpretation of data in accordance with study objectives.

S K Sharma (2011) defined analysis as the process of systematically applying statistical and logical techniques to describe, summarize and compare data.

OBJECTIVES OF THE STUDY

1. To assess the pre-test knowledge score on Cardio Pulmonary Resuscitation among GNM 2nd year students in Desh Bhagat University School of Nursing.
2. To assess the post-test knowledge score after implementing the structured teaching programme on knowledge regarding Cardio Pulmonary Resuscitation among GNM 2nd year students in Desh Bhagat University School of Nursing.
3. To compare the pre-test and post-test knowledge score on Cardio Pulmonary Resuscitation among GNM 2nd year students in Desh Bhagat University School of Nursing.
4. To find out the association between pre-test and post-test knowledge score with their selected demographic variables.

ORGANIZATION OF THE STUDY FINDINGS

Section A:

Description of demographic data.

Section B:
Assess and compare the pre-test post-test Knowledge score on Cardio pulmonary Resuscitation among GNM 2nd year students.

Section C:
Association of pre-test and post-test knowledge score with their selected demographic variables.

SECTION A
DESCRIPTION OF DEMOGRHAPHIC DATA
The section describes the demographic characteristics of GNM 2nd year students under the study. The demographic characteristics are described in terms of Age in years, Gender, Religion, Area of residence, and Source of information.

Frequency and percentage distribution of demographic characteristics are computed for describing the sample characteristics. These findings are presented in Table 1.

TABLE 1 Frequency and Percentage Distribution of Demographic Characteristics of GNM 2nd year Students

N= 50

Demographic Characteristics	Frequency(f)	Percentage (%)
Age		
19	02	04
20	10	20
21	32	64
>21	06	12
Gender		
Male	09	18
Female	41	82
Religion		
Hindu	03	06
Sikh	45	40
Muslim	02	04
Christian	00	00
Area Of Residence		
Urban	14	28
Rural	36	72
Source Of Information		
Internet	35	70
Book and Journals	08	16
News paper	04	08
If any other specific	03	06

As per percentage distribution of student according to **age and gender** it was found that Maximum students were in 21yrs (64%) followed by, 20yrs (20%) followed by above 21years (12%) and 19 yrs (4%) included age group. Majority of students were females (82%) and only (18%) were male students.

As per **religion and area of residence** percentage distribution of student was found that Most of the students were belongs to Sikh religion (90%), followed by (6%) Hindu and only (4%) Muslim, Maximum students were residing in rural area (72%) followed by (28%) were living in urban area. Inspite of this, Maximum students (70%) acquired knowledge from internet, followed by (16%) students got knowledge from books and journals and (8%) acquired knowledge through newspapers while only (6%) acquired knowledge from any other specific.

It is concluded that maximum students were age group 21 yrs, majority of students were females, most of students were belongs to Sikh religion. Maximum student was residing in rural area and most of acquired the knowledge from internet regarding CPR.

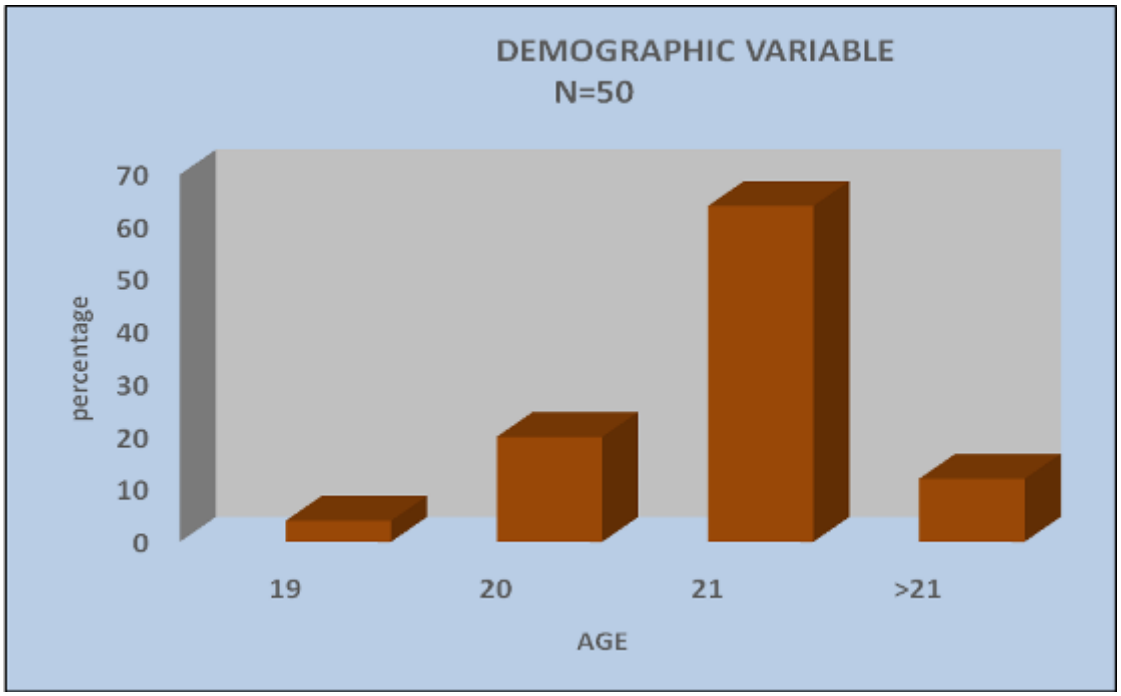


Figure 3 bar diagram representing frequency distribution of subject as per age

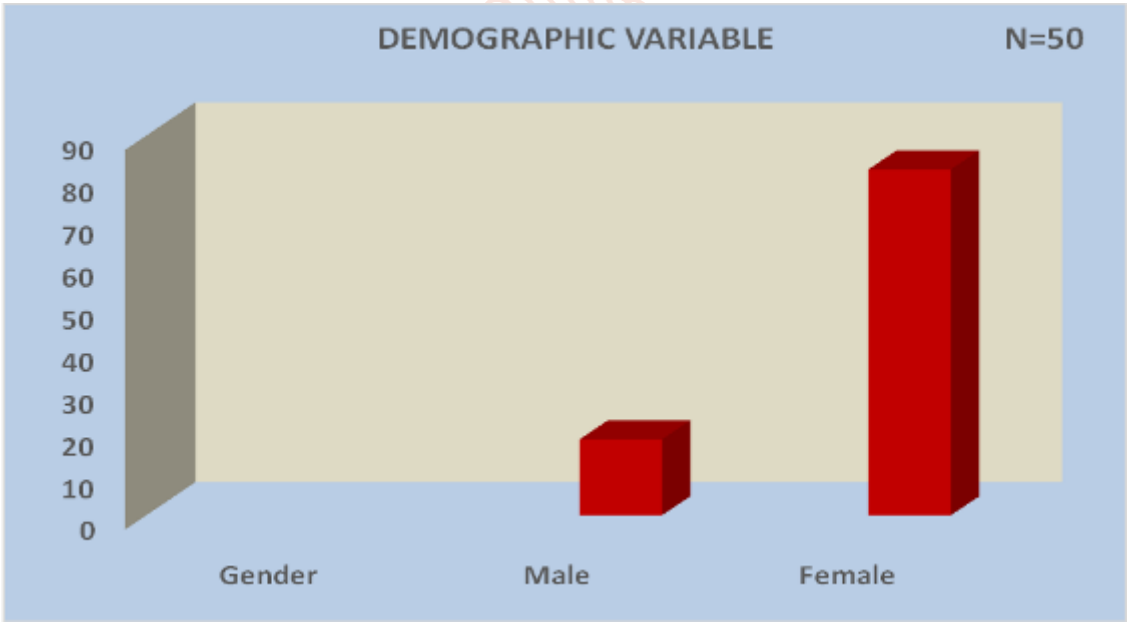


Figure 4 bar diagram representing frequency distribution of subject as Gender

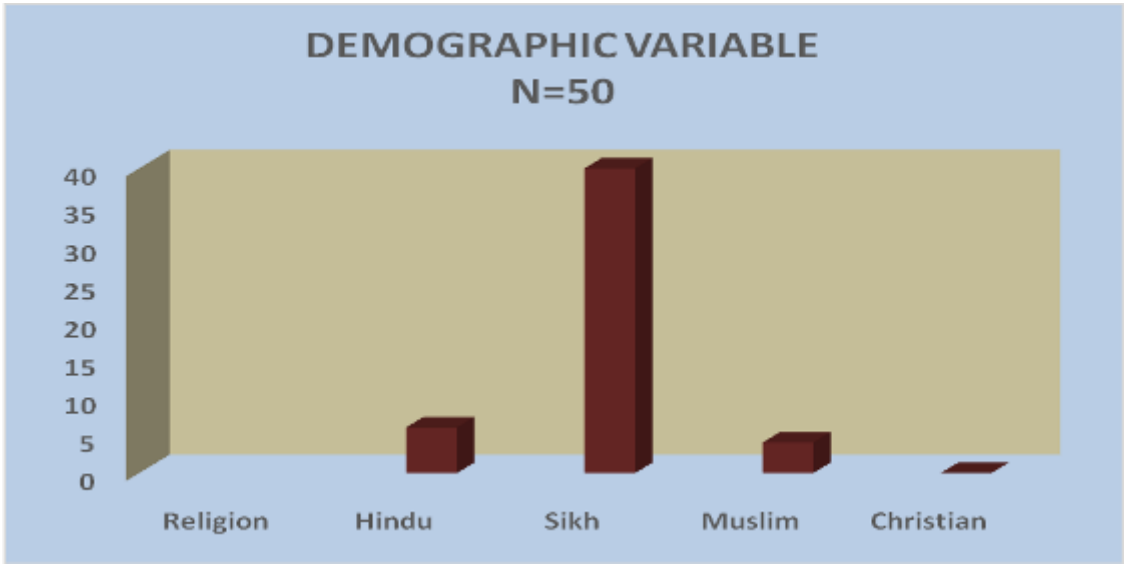


Figure 5 bar diagram representing frequency distribution of subject as Religion

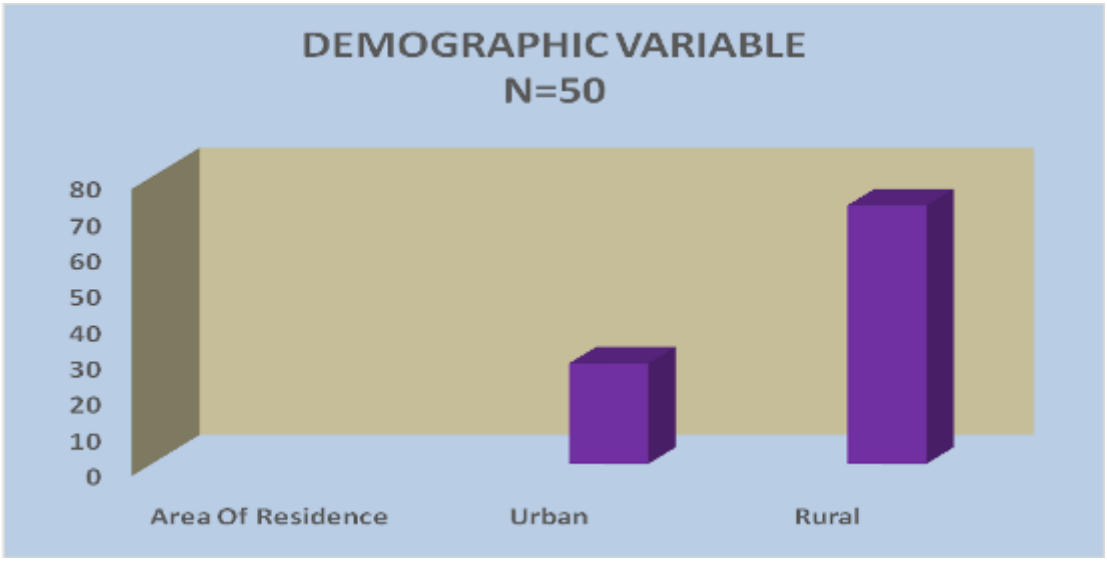


Figure 6 bar diagram representing frequency distribution of subject as area of residence

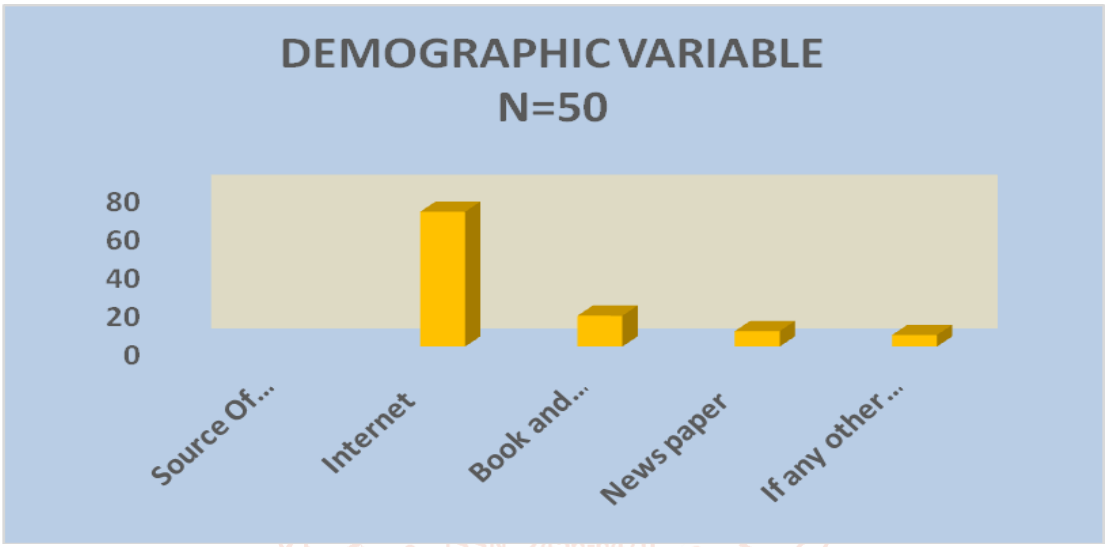


Figure 7 bar diagram representing frequency distribution of subject as source of information

SECTION B

Assessment of the Level of Knowledge Score on Cardio Pulmonary Resuscitation among GNM 2nd Year Students.

This section describes the knowledge score on Cardio Pulmonary Resuscitation among GNM 2nd year students.

Frequency and percentage describe of criterion measurement of knowledge score is computed for describing sample characteristics of both pre-test and post-test. The findings are presented in Table 2. The comparison between pre-test and post-test knowledge score among GNM 2nd year students.

OBJECTIVE 1: To assess the pre-test and post-test knowledge score regarding cardio pulmonary resuscitation among GNM 2nd year students.

OBJECTIVE 2: To compare the pre-test and post-test knowledge score regarding cardio pulmonary resuscitation among GNM 2nd year students

TABLE 2 Criterion Measure of Level of Knowledge regarding Neonatal Resuscitation among GNM 2nd year students.

N=50

Level of knowledge	PRE-TEST KNOWLEDGE		POST-TEST KNOWLEDGE	
	FREQUENCY (f)	PERCENTAGE (%)	FREQUENCY (f)	PERCENTAGE (%)
Good	00	00	35	70
Average	25	50	15	30
Below average	25	50	00	00

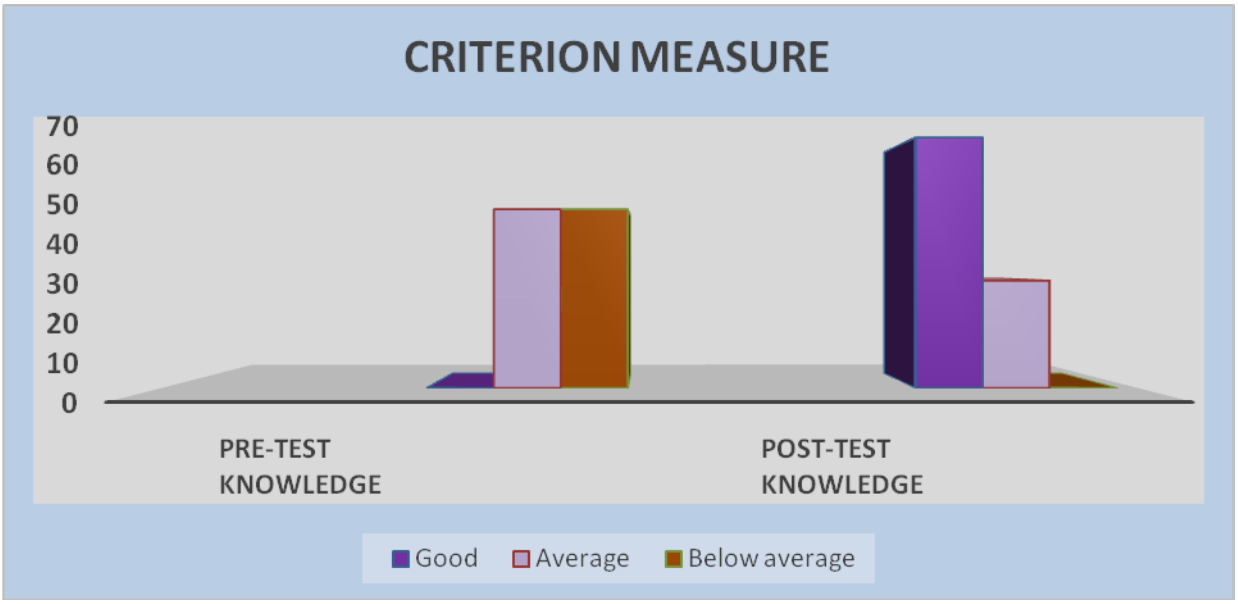


Figure 8 Bar diagram showing level of knowledge pre-test and post-test knowledge score regarding cardio pulmonary resuscitation among GNM 2nd year students

Table 2 represents that equal no. of subjects (50%) had average knowledge score

followed by subjects who had below average (50%) knowledge score in their pre-test regarding neonatal resuscitation. While in post-test maximum number of (70%) the subjects had good knowledge score followed by subjects who had average knowledge score (30%) regarding neonatal resuscitation.

TABLE 3 Mean, Standard Deviation and 't' value of Knowledge Score regarding Cardio Pulmonary Resuscitation of GNM 2nd Year students.

Objective 2: To compare the pre-test and post-test knowledge score regarding neonatal resuscitation among GNM 2nd year students

H_1: There will be significant difference between pre-test and post-test knowledge score regarding neonatal resuscitation among GNM 2nd year students.

N=50

KNOWLEDGE SCORE	Mean ± S.D	t – test
Pre-test knowledge score	10.54± 3.09	3.42*
Post-test knowledge score	21.84± 2.70	

Maximum Knowledge score: 30
Minimum Knowledge score: 0

*Significantp<0.05
df = 49
t_{tab}=2.02

Table 3 presents the values of knowledge scores of nursing students. It was found that the mean pos-test knowledge score of nursing students regarding neonatal resuscitation was (21.84) higher than the mean pre-test knowledge score of nursing students regarding neonatal resuscitation (10.54). And standard deviation of pre-test knowledge score (3.09) is higher than post-test knowledge score (2.70) as shown in Fig.3 The computed `t` value of 3.42 was found statistically significant.

Hence research hypothesis H_1 was accepted showing significant difference between pre-test knowledge score and post-test knowledge score.

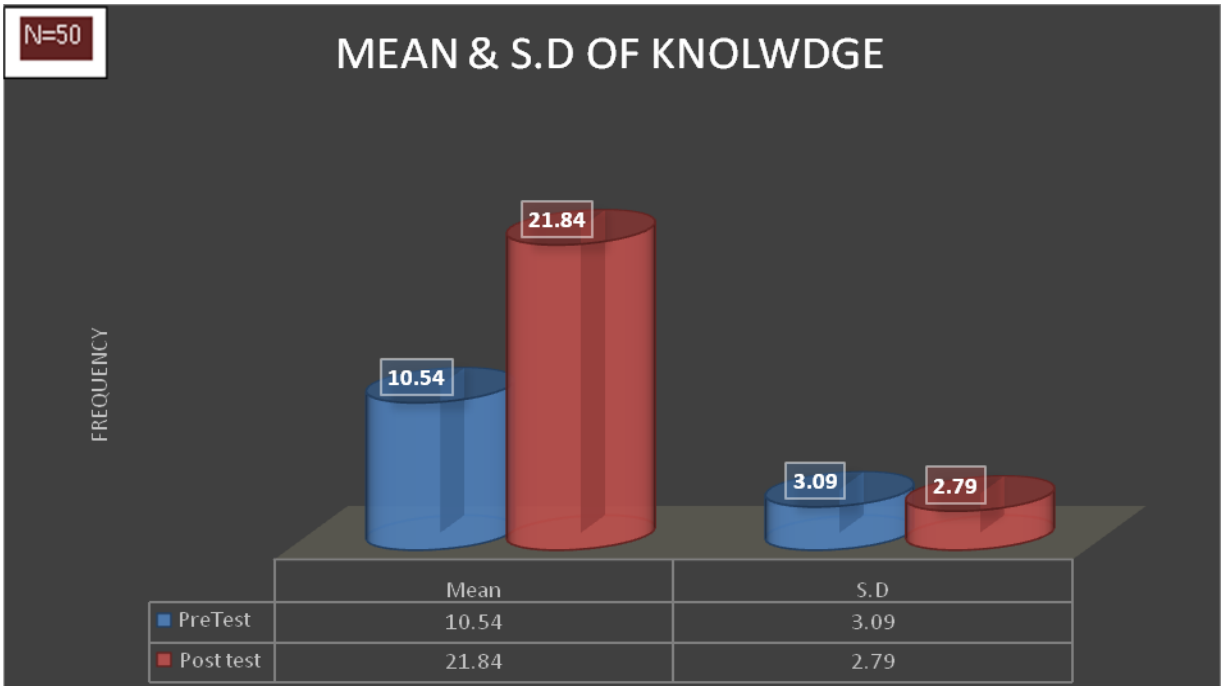


Fig. 9 Cylindrical Bar Graph showing the Mean and SD Comparison of Pre-test and Post-test Knowledge Score

SECTION C

Association of between pre-test and post-test knowledge score with their selected demographic variables. This section describes the association of pre-test post-test knowledge score with their demographic variables such as age, gender, religion, area of residence, source of information of GNM 2nd year students.

The chi square values showing association of selected demographic variables of GNM 2nd year students are computed and presented in Table 4 and 5.

Objective 3: To find out the association between pre-test and post-test knowledge score with their selected demographic variables.

H_2: There will be significant association between pre-test and post-test knowledge score with their selected demographic variables.

TABLE 4 Chi square value showing association between pre-test knowledge score with their selected demographic variables

N=50

Sr No.	Demogrhaphic Characterstics	Level of Knowledge			df	x^2	Tab. Value
		Good	Average	Below average			
1.	**Age**						
1.1	19	00	00	02			12.59^{NS}
1.2	20	00	06	04	06	3.18	
1.3	21	00	17	15			
1.4	>21	00	02	04			
2.	**Gender**						
2.1	Male	00	03	06			5.99^{NS}
2.2	Female	00	22	19	02	1.21	
3.	**Religion**						
3.1	Hindu	00	02	01			12.59^{NS}
3.2	Sikh	00	22	23	06	0.55	
3.3	Muslim	00	01	01			
3.4	Christian	00	00	00			
4.	**Area of Residence**						
4.1	Urban	00	09	05			5.99^{NS}
4.2	Rural	00	16	20	02	1.58	

5.	**Source of information**						
5.1	Internet	00	19	16			12.59^{NS}
5.2	Books and journals	00	05	03	06	4.75	
5.3	Newspapers	00	01	03			
5.4	If any other specify	00	00	03			

*significant p≤ 0.05 **NS**− non significant

Table 4 depicted the association of pretest knowledge level with the socio-demographic variables. The calculated value of chi square test for age (3.18), gender (1.21), religion (0.55), area of residence (1.58) and source of information (4.75) were found no association between knowledge score with socio-demographic variables.

Hence, research hypothesis H_2 was rejected showing no association between pre test knowledge score with selected demographic variables.

TABLE 5 Chi square value showing association between post-test knowledge score with their selected demographic variables.

N=50

Sr No.	Demogrhaphic Characterstics	Level of Knowledge			df	x^2	Tab. Value
		Good	Average	Below average			
1.	**Age**						
1.1	19	01	01	00			
1.2	20	03	07	00	06	10.43	12.59^{NS}
1.3	21	26	06	00			
1.4	>21	05	01	00			
2.	**Gender**						
2.1	Male	03	06	00			
2.2	Female	32	09	00	02	7.02	5.99*
3.	**Religion**						
3.1	Hindu	02	01	00			
3.2	Sikh	33	12	00	06	4.92	12.59^{NS}
3.3	Muslim	00	02	00			
3.4	Christian	00	00	00			
4.	**Area of Residence**						
4.1	Urban	12	02	00			
4.2	Rural	23	13	00	02	2.28	5.99^{NS}
5.	**Source of information**						
5.1	Internet	25	10	00			
5.2	Books and journals	07	01	00	06	6.10	12.59^{NS}
5.3	Newspapers	03	02	00			
5.4	If any other specify	00	02	00			

*Significant p≤ 0.05, **NS**− non significant

Table 5 depicted the association of post-test knowledge score with the socio-demographic variables. The calculated value of chi square test for age (10.43), religion (4.92), area of residence (2.28) and source of information (6.10) were found no association between knowledge score with socio demographic variables. On the other hand, the calculated value of chi square (7.02) for gender was showing the association with knowledge score.

Hence research hypothesis. H_2 was accepted in relation to gender showing association with knowledge score.

SUMMARY:

The chapter has dealt with discussion related to findings of the study and with appropriate supportive findings in accordance with the objectives.

V. DISCUSSION

This chapter presents the major findings of the study and discusses them in relation to similar studies conducted by other researchers. The aim of the study was to compare the structured teaching programme Knowledge regarding Cardio Pulmonary Resuscitation among GNM 2nd year students. The

findings of the study have been discussed as per the objectives along with findings of other studies.

OBJECTIVES

1. To assess the pre-test knowledge score on Cardio Pulmonary Resuscitation among GNM 2nd year students in Desh Bhagat University School of Nursing.
2. To assess the post-test knowledge score after implementing the structured teaching programme on knowledge regarding Cardio Pulmonary Resuscitation among GNM 2nd year students in Desh Bhagat University School of Nursing.
3. To compare the pre-test and post-test knowledge score on Cardio Pulmonary Resuscitation among GNM 2nd year students in Desh Bhagat University School of Nursing.
4. To find out the association between pre-test and post-test knowledge score with their selected demographic variables.

The study findings were discussed in this chapter with reference to the objective of the study:

Objectives

1. To assess the pre-test knowledge score on Cardio Pulmonary Resuscitation among GNM 2nd year students in Desh Bhagat University School of Nursing.
2. To assess the post-test knowledge score after implementing the structured teaching programme on knowledge regarding Cardio Pulmonary Resuscitation among GNM 2nd year students.

Finding 1

As per percentage distribution of student according to **age and gender** it was found that in 19yrs (4%), in 20yrs (20%), in 21yrs (64%) and in above 21years (12%) included in age group. Majority of students were females (82%) and only (18%) were male student.

As per **religion and area of residence** percentage distribution of student was found that Most of the students were belongs to Sikh religion (90%), then (6%) had Hindu and only (4%) had Muslim, Maximum students were living in rural area (72%) and only (28%) were living in urban area. Inspite of this, Maximum students (70%) acquired knowledge from internet, followed by (16%) students got knowledge from books and journals and (8%) acquired knowledge through newspapers while only (6%) acquired knowledge from any other specific.

It is concluded that maximum students were in age group 21 yrs and majority of students were females, most of students were belongs to Sikh religion. Maximum student has living in rural area and They acquired the knowledge from internet regarding Cardio Pulmonary Resuscitation.

The equal no. of subjects (50%) had average knowledge score followed by subjects who had below average (50%) knowledge score in their pre-test regarding Cardio Pulmonary Resuscitation. While in post-test maximum number of (70%) the subjects had good knowledge score followed by subjects who had average knowledge score (30%) Cardio Pulmonary Resuscitation.

Objective

To compare the pre-test and post-test knowledge score on Cardio Pulmonary Resuscitation among GNM 2nd year students.

Finding 2

It was found that the values of knowledge scores of nursing students that the mean post- test knowledge score of nursing students regarding Cardio Pulmonary Resuscitation was (21.84) higher than the mean pre-test knowledge score of nursing students regarding Cardio Pulmonary Resuscitation (10.54). And standard deviation of pre-test knowledge score (3.09) is higher than post- test knowledge score (2.70). The computed `t` value of 3.42 was found statistically non-significant. These finding were consistent with the finding of

Kaur Rajwinder, Jangwal Lalita, (2016) who conducted a study to assess the effectiveness of Structured Teaching Programme regarding Cardio Pulmonary Resuscitation among G.N.M Interns students in selected Nursing College, Jalandhar, Punjab. The result showed that the mean post-test knowledge score (24.37) was higher than the mean pre -test knowledge score (13) and find to be non-significant with the calculated `t` value of pre-test and post-test (pre-test-0.88 and post-test-0.75).

Objective

To find out the association between pre-test and post-test knowledge score with their selected demographic variables.

Finding 3

The finding of the study in pre-test suggests that there was no significant association between knowledge score with selected demographic variables (age, gender, religion, area of residence, source of information. The calculated value of chi square test for age (3.18), gender (1.21), religion (0.55), area of residence (1.58) and source of information (4.75) were found no association between knowledge score with socio demographic variables.

On the other hand, the finding of the study in post-test suggests that there was no significant association between knowledge score with selected demographic variables (age, religion, area of residence, source of information). The calculated value of chi square test for age (10.43), religion (4.92), area of residence (2.28) and source of information (6.10). were found no association between knowledge score with socio demographic variables. But the calculated value of chi square (7.02) for gender was showing the association with knowledge score. These finding were consistent with the finding of **Waffa Elarocis et al. (2014) who** conducted a study to assess the effectiveness of e-learning in enhancing resuscitation skills, knowledge and confidence of undergraduate Nursing students at king squad Bin-Abdul-Aziz University for Health Science College of Nursing, Jeddah. The result revealed that the Nursing students of the experimental group were more skillful and had more knowledge about resuscitation than the nursing students of the control group and the difference were not statically significant.

SUMMARY:

The chapter has dealt with discussion related to findings of the study and with appropriate supportive findings in accordance with the objectives.

VI. FINDINGS AND RECCOMENDATIONS

Findings

1. **Findings of socio-demographic characteristics regarding Cardio Pulmonary Resuscitation**

- Maximum students (64%) were in age 21 years.
- Majority of students (82%) were females.
- Most of the students (90%) belongs to sikh religion.
- Maximum students (72%) were living in rural area.
- Maximum students were (70%) acquired knowledge from internet regarding cardio pulmonary resuscitation.

2. **Findings according to pre-test and post-test knowledge score regarding Cardio Pulmonary Resuscitation among students.**

In pre-test knowledge score

- Maximum students (50%) had below average knowledge regarding cardio pulmonary resuscitation.
- Maximum students (50%) had average knowledge regarding cardio pulmonary resuscitation.

In post-test knowledge score

- Only (30%) students had average knowledge regarding cardio pulmonary resuscitation
- Maximum students (70%) had good knowledge regarding cardio pulmonary resuscitation.

3. **Chi square association of pre-test and post-test practice regarding cardio pulmonary resuscitation with selected demographic variable**

- Chi square value showed that there was no association of pre-test knowledge score with selected demographic variables i.e. age, gender, religion, area of residence source of information to cardio pulmonary resuscitation.
- Chi square value showed that there was no association of post-test knowledge score with selected demographic variables age, religion, area of residence and source of information to cardio pulmonary resuscitation. But there was association in relation to gender with post-test knowledge score.

RECOMMENDATIONS

The study can be replicated on large sample to validate and generalize its findings.

- The study can be conducted by including additional demographic variables.
- A study can be carried out to evaluate the knowledge regarding neonatal resuscitation.

NURSING IMPLICATIONS

The findings of this study can be utilized in all the domains of nursing i.e. nursing education and nursing administration and nursing research. The implications are:

NURSING PRACTICE

- Students should have knowledge and skills about cardio pulmonary resuscitation. Hence, they can reduce the mortality rate and provide standardized quality care.
- Nursing interventions should also be planned to improve quality of care among the patients that require cardio pulmonary resuscitation.

NURSING EDUCATION

- In-service educations and training programmes regarding Cardio Pulmonary Resuscitation should be part of nursing curriculum to enhance the knowledge and skills of students.
- Nursing education should prepare the nurses with potential for imparting information regarding knowledge and practice skills of Cardio Pulmonary Resuscitation to the students and help them out in choosing suitable methods for cardio pulmonary resuscitation and reduction of mortality rate.

NURSING ADMINISTRATION

- To assess the knowledge and practice of staff nurses and students regarding cardio pulmonary resuscitation.

- Administrative support should be provided to conduct in-service educational program for the nursing personnel regarding cardio pulmonary resuscitation.
- Administration should form the standard protocol for cardio pulmonary resuscitation for all intensive care units.

NURSING RESEARCH

- The study will motivate the beginning researcher to conduct the same study with different variables on a large scale. The public and private agencies should also encourage research in this field through materials and funds.
- In-service education programme should be developed to spread the awareness about the reduction of mortality rate regarding neonatal resuscitation.

VII. SUMMARY

This chapter deals with summary of the study. As knowledge and skills are important in the clinical field, so students must have knowledge and skills regarding Cardio Pulmonary Resuscitation to reduce the infant mortality rate and this knowledge and skills can be improved through in-service education programmes.

OBJECTIVES

1. To assess the pre-test knowledge score on Cardio Pulmonary Resuscitation among GNM 2nd year students in Desh Bhagat University School of Nursing.
2. To assess the post-test knowledge score after implementing the structured teaching programme on knowledge regarding Cardio Pulmonary Resuscitation among GNM 2nd year students in Desh Bhagat University School of Nursing.
3. To compare the pre-test and post-test knowledge score on Cardio Pulmonary Resuscitation among GNM 2nd year students in Desh Bhagat University School of Nursing.
4. To find out the association between pre-test and post-test knowledge score with their selected demographic variables.

The primary aim of the study was to assess the effect of structured teaching programme on Knowledge regarding Neonatal Resuscitation among GNM 2nd year students in Desh Bhagat University School of Nursing. In this study the researcher tried to develop a tool to assess the knowledge regarding Cardio Pulmonary Resuscitation among students.

RESEARCH METHODOLOGY

A pre-experimental study was conducted at Desh Bhagat University School of Nursing. A methodological research design was a pre-experimental research design with one group pre-test and post-test. Total sample for study were 50 students selected by purposive sampling technique. The tool was used to collect data in this study i.e., structured demographic sheet, self-structured knowledge questionnaire. Validity of the research tool was established under the guidance of various experts from the field of Medical Surgical nursing. Reliability of closed ended questionnaire was established with the use of test-retest method. The pilot study was conducted for the feasibility of study. Permission to conduct the study was taken from director of Ajit College of Nursing, Sunam. Analysis of the data was done by using both descriptive and inferential statistics.

DATA COLLECTION PROCESS

Data was collected through self-structured knowledge questionnaire. The steps of data collection were as follow:

- Pre-test on knowledge regarding Cardio Pulmonary Resuscitation.
- Implementation of Structured Teaching Programme.
- Post-test on knowledge regarding Cardio Pulmonary Resuscitation.

RESULTS

The results of study showed that post-test knowledge mean score (21.84) was higher than the pre− test knowledge mean score (10.54) regarding Cardio Pulmonary Resuscitation and standard deviation of pre− test knowledge score (3.09) was higher than the post− test knowledge score (2.70) regarding Cardio Pulmonary Resuscitation among GNM 2nd year students.

So the results of the study showed the difference between pre-test and post-test knowledge score regarding Cardio Pulmonary Resuscitation among GNM 2nd year students was statistically significant and this was due to STP on Cardio Pulmonary Resuscitation and there was moderate relationship between pre− test knowledge score and post− test knowledge score .

INTERPRETATION AND CONCLUSION

The study showed that

- Post− test knowledge mean score was higher than pre-test knowledge score and standard deviation of pre− test knowledge score was higher than the post-test knowledge score regarding Cardio Pulmonary Resuscitation among GNM 2nd year students.
- This study also highlighted that there was no association between pre-test and post-test

knowledge score with demographic variable regarding Cardio Pulmonary Resuscitation but association was found in post-test knowledge score in relation to gender regarding Cardio Pulmonary Resuscitation.

Hence it was concluded that STP was effective as evidence by the result of pre-test and post-test knowledge regarding Cardio Pulmonary Resuscitation. The knowledge and skills of students can be improved through STP.

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ANNEXURE− 1

LETTER OF REQUEST FOR THE OPINION OF EXPERT ON CONTENT VALIDITY OF RESEARCH TOOL

To

…….

…….

…….

Subject: - Request for opinion and suggestion of experts for establishing content validity of research tool.

Requested Madam,

I am students of M. Sc. Medical Surgical Nursing Final year in Desh Bhagat University School of Nursing, Mandi Gobindgarh, for the partial fulfillment of our course, We need to undertake a research project and I have selected the below mentioned topic of research project **" A Pre experimental Study to Assess the effectiveness of structured teaching programme on knowledge regarding cardio pulmonary resuscitation among GNM 2nd year students Desh Bhagat University School Of nursing, Mandi Gobindgarh, Punjab.**

I request you to go through the content of tools and validate it in terms of its relevance, appropriateness and accuracy. I also request you to give your valuable suggestions which will enable us to establish the content validity of tool.

Hereby I am enclosing the copy of following:-

1. Problem statement and objectives of the project.
2. Demographic variables.
3. Self-structured interview.

Thanking you for your Anticipation.

Yours Sincerely,

Nazpreet Kaur

ANNEXURE−2

LIST OF EXPERTS

Mr. Deepak Shandliya	Vice Principal, Mental Health Nursing
Dr. Rajwant Kaur Raddhawa	Associate Professor, Community Health Nursing.
Mr. Prabhjot Singh	Associate Professor, Community Health Nursing.
Ms. Sukhmanpreet Kaur	Assistant Professor, Midwifery and Obstetrical Nursing
Ms. Rekha Rani	Assistant Professor, Midwifery and Obstetrical Nursing
Ms. Bhupinder Kaur	Nursing Tutor, Mental Health Nursing
Ms. Anjali Thakur	Nursing Tutor, Mental Health Nursing

ANNEXURE−3

To

…….

…….

…….

Requested Madam,

Subject: - Request for permission to conduct pilot study

I am forwarding the M. Sc Medical Surgical Nursing Final Year student of Desh Bhagat University School of Nursing, Mandi Gobindgarh to collect the data for Pilot Study for the following research topic.

"A Pre experimental Study to Assess the effectiveness of structured teaching Programme on Knowledge regarding Cardio Pulmonary Resuscitation among GNM 2nd year students.

Kindly allow them for the same. The tool for above said research topic is attached for your ready reference.

With Cordial Regards

Prof. Deepak K Shandily

Vice Principal

Desh Bhagat University

School of Nursing

Mandi Gobindgarh

ANNEXURE−4

To

…….

…….

…….

Requested Madam,

Subject: - Request for permission to conduct main study

I am forwarding the M. Sc Medical Surgical Nursing Final Year student of Desh Bhagat University School of Nursing, Mandi Gobindgarh to collect the data for Pilot Study for the following research topic.

"A Pre experimental Study to Assess the effectiveness of structured teaching Programme on Knowledge regarding Cardio Pulmonary Resuscitation among GNM 2nd year students.

Kindly allow them for the same. The tool for above said research topic is attached for your ready reference.

With Cordial Regards

Nazpreet Kaur

ANNEXURE− 7
CONSENT FORM

I_____M/o,

T/o_____hereby giving the consent to participate in the study entitled "**A Pre experimental Study to Assess the effectiveness of structured teaching programme on knowledge regarding cardio pulmonary resuscitation among GNM 2nd year students of Desh Bhagat University School Of nursing, Mandi Gobindgarh, Punjab. ,** for benefits of science only. The general purposes have been explained to me. However, I can opt out of the study at any part of the time without asking the reason and will not be affected by my discussion of not participating in the study.

Name and Signature of
Patient / Teacher with Date

_____
_____

Name and Signature of
Investigator with Date

_____
_____

Name and signature of
Guide with Date

_____
_____

ANNEXURE−8
SECTION – A
DEMOGRAPHIC VARIABLES

1. Age (in year)
- 19 years ( )
- 20 years ( )
- 21 years ( )
- >21years ( )

2. Gender
- Male ( )
- Female ( )

3. Religion
- Hindu ( )
- Sikh ( )
- Muslim ( )
- Christian ( )

4. Area of Residence
- Urban ( )
- Rural ( )

5. Source of information
- Internet ( )
- Books journals ( )
- Newspapers ( )
- If Any other specific… ( )

SECTION – B SELF STRUCTURED QUESTIONARE

1. What is Cardio Pulmonary resuscitation?

A. To revive the patient through suctioning, intubation
B. To revive the patient through suctioning, PPV , chest compression, epinephrine
C. To revive the patient through chest compression, PPV
D. To revive the patient through intubation, epinephrine

2. How many percentage of patients required assistance at time of arrest?

A. 5%
B. 10%
C. 20%
D. 15%

3. What are the indication for cardio pulmonary resuscitation?

A. asphyxia
B. injury
C. defects
D. Tachycardia

4. What is the sequence of cardio pulmonary resuscitation?

A. BATC
B. TABC
C. TCAB
D. CABT

5. What is the initial step for patient having normal respiration?

A. PPV (positive pressure ventilation)
B. Routine care
C. Chest compression
D. Endotracheal intubation

6. What is the normal position of the patient for airway clearance during resuscitation?

A. Neck slightly flexed
B. Flexion of the neck
C. Neck hyper extended
D. Neck slightly extended

7. What are the three characteristics of the vigorous patient?

A. Having strong respiratory efforts , good muscle tone and HR> 100 bpm
B. Having decrease respiratory efforts , good muscle tone , and HR>100 bpm
C. Having strong respiratory efforts , good muscle tone and HR< 100 bpm
D. Having strong respiratory efforts , decrease muscle tone and HR< 100bpm

8. What is the size of catheter used for suctioning?

A. 12F and 15F
B. 4F and 7F
C. 6F and 8F
D. 14F and 16F

9. During suctioning which part is suctioned first?

A. Mouth
B. Nose
C. Tracheal
D. Oesophageal

10. What is the maximum negative pressure while suctioning?

A. 90mmHg
B. 100mmHg
C. 120mmHg
D. 130mmHg

11. Which of the following are correct ways to provide tactile stimulation?
A. Slap the back
B. Rub the back
C. Squeeze the rib cage
D. Tapping on chest

12. In which way the laryngoscope should be held?
A. Operator left hand
B. Supporter right hand
C. Operator right hand
D. Supporter left hand

13. What is the duration for intubation procedure?
A. 40 seconds
B. 30 seconds
C. 60 seconds
D. 20 seconds

14. If the patient is apneic after tactile stimulation what should be initiated immediately
A. Administer epinephrine
B. Initiate positive pressure ventilation
C. Initiate oxygen therapy
D. Initiate chest compression

15. How will you assess the effectiveness of positive pressure ventilation?
A. By assessing the heart rate
B. By assessing the pulse rate
C. By assessing the breathing pattern
D. By assessing the saturation

16. What is the most important and effective action in cardio pulmonary resuscitation?
A. To stimulate the lungs
B. To ventilate the chest
C. To ventilate the lungs
D. To initiate the chest compression

17. What is the rate to provide positive pressure ventilation?
A. 30-60bpm
B. 60-40bpm
C. 40-60bpm
D. 30-40bpm

18. At what rate of heart rate the ventilation should be stopped?
A. 100bpm and baby breath spontaneously
B. 60bpm
C. 100bpm
D. 60bpm and baby breath spontaneously

19. What will be the next step after 5 inflation with heart rate above 100bpm?
A. Look for baby breathing pattern
B. Look for pulse
C. Look for chest raise
D. Look for physical movement

20. What are chest compressions?
A. Arrhythmic chest compressions of sternum
B. Rhythmic chest compressions of sternum
C. Decrease the intrathoracic pressure
D. Ventilation of the lungs

21. When to initiate the chest compression.
A. If heart rate is above 60 after PPV
B. If heart rate is below 60 after PPV
C. If heart rate is above 60 before PPV
D. If heart rate is below 60 before PPV

22. Which one is preferred technique for chest compression?
A. Palm technique
B. Finger technique
C. 2 Thumb technique
D. 2-finger technique

23. What is the compression ventilation ratio?
A. 3:1
B. 2:1
C. 1:1
D. 3:2

24. What is the correct depth of chest compression?
A. One forth of anterior posterior chest diameter
B. One third of anterior posterior chest diameter
C. One half of anterior posterior chest diameter
D. One of anterior posterior chest diameter

25. How many chest compression and breath given in one minute?
A. 100compression and 10 breaths
B. 60compression and 30 breaths
C. 90 compression and 30 breaths
D. 30 compression and 30 breaths

26. When to stop chest compression?
A. Heart rate >60bpm
B. Heart rate>100bpm
C. Heart rate>80bpm
D. Heart rate < below 100bpm

27. What is the complication of chest compression?
A. Damage to xiphoid and fracture of rib
B. Injury to external organs
C. Fracture of sternum
D. Injury to the spine

28. When will be Epinephrine is indicated?
A. HR>100bpm
B. HR<60bpm
C. HR<80bpm
D. HR>60bpm

29. What is the recommended concentration of epinephrine?
A. 1:1000
B. 1:10, 000
C. 1:10
D. 1:100

30. What route is preferred for epinephrine administration?
A. Endotracheal tube
B. Intranasal
C. IV infusion
D. By umbilical vein

ANNEXURE−9

LIST OF FORMULAS USED FOR ANALYSIS

1. Mean ($\overline{X}$)

$\bar{X}$ = $\frac{\text{Sum of the values } (\sum x)}{\text{Number of values (n)}}$

$\overline{X}$=Mean

2. Standard deviation (SD)

SD = $\sqrt{\frac{\sum (x-\bar{x})^2}{N}}$

Where; $\sqrt{(x-x)^{2;}}$ is positive square root of mean

n; is no of observations.

3. 't' test

S = $\sqrt{\frac{\sum d^2 - n\,(\bar{d})^2}{n\ -1}}$

4. Chi square($\chi 2$)

$\chi 2$ $\frac{(\sum (O-E)^2)}{(E)}$

df =(Column – 1) (Row – 1)

Where,

- O is observed frequency
- E is expected frequency
- E = $\frac{\text{Column or Vertical total} \times \text{Row or Horizontal total}}{\text{Sample total}}$
- df is degree of freedom