A Study to Assess Effectiveness of Structured Teaching Programme on Knowledge and Practice Regarding Basic Life Support among Staff Nurse Working in Selected Hospital at Bhopal, (M.P)

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Abstract

May people experience respiratory arrest every year as a result of result of acute coughing that stops them from breathing after an accident or illness. A tiny percentage of theses of these situations may potentially result in cardiac arrest since it will stop the patient's heart from breathing. In affluent nations, sudden cardiac arrest is one of the leading cause of mortality when breathing and heartbeat stop, abrupt death happens.

Research has demonstrate that performing CPR on a victim of cardiac arrest appropriately can have a positive impact on their survival both in the short and long term. Because cardiac arrest, which is defined as the abrupt halt of breathing and appropriate circulation of blood by the heart, can happen at any time or in any situation, every nurse and doctor should be trained in CPR. Basic and advanced cardiac life support comprise the two categories of resuscitation measures. The American Heart Association is actively involved in training BCLS and ACLS specialists and sets the standards for CPR. When working with patients, the American Heart Association advise nurses and doctors to obtain their BCLS and ACLS certification. Most of the time, CPR alone cannot save a victim with cardiac arrest. It is an essential chain link of survival consists of the following steps: early CPR and EMS system activation early advanced care and defibrillation.

Keywords: Knowledge, cardiac arrest, basic life support

Introduction

The heart is hollow, muscular organ located in the centre of the thorax, where it occupies the space between the lung and rest on the diagram. It weighs approximately 300g. Although heart pumps blood to the tissue, supplying them with oxygen and other nutrients.

Each year a number of person suffer with an accident or illness, severe cough 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 major cause of death in developed countries. Sudden death occurs when heartbeat and breathing stop.

The other common causes of sudden death include heart attack, electrical, shock, drowning choking, suffocation, trauma, drug reaction, and allergic reaction. The best chance of ensuring their survival is to give them emergency treatment know 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 LUNG‖ 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 say alive.

Despite advances in cardiopulmonary resuscitation (CPR) methods whole, including the introduction of the automatic electrical defibrillator (AED) and therapeutic hypothermia. Only about 10% of adult out-of-hospital cardiac arrest (OHCA) victims survives to hospital discharge, and the majority of survivors have moderate to server cognitive deficits 3 months after resuscitation.

Resuscitation from cardiac 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 setting it takes an averages 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

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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 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 is composed of the following sequence: early activation of the EMS system, early CPR. Early defibrillation early advanced care.

Recommending that chest compression 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-Compression) 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. 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 compression right away.

Cardiopulmonary revival (CPR) is the establishment procedure for the crisis treatment of heart failure (CA). The institutional preparing of CPR has been accentuated like never before. Average folks in created nation and locales have gotten prominent instruction of CPR program of advanced cardiovascular life support (ACLS) preparing which was propelled together by universal medical assistance International Center, Minister of wellbeing, PR china and America Heart Association in 2004. Medical attendant of wellbeing administrations who have gotten proficient instruction and preparing ought to have the option to rehearse CPR precisely and progressed cardiovascular life backing to the patient who endured an assault of heart failure.

This is considered as the fundamental prerequisite and capability of authorized medical caretakers. In the more extensive network it is a desire that skill in cardiopulmonary revival (CPR) and progressed cardiovascular life support (ACLS) is at an elevated requirement in all emergency clinic restorative and nursing staff (Buck Barrett and Squire 2004: Perkins *et al* 1999). While CPR/ACLS competency is viewed as a crucial aptitude for human services labourers, the proof recommends that maintenance of CPR/ACLS information and abilities is commonly poor, studies have likewise recognized distinction in the nature of ACLS/CPR performed by different human services suppliers. Regularly chest pressure is performed insufficiently with moderate paces of pressure and lacking profundity of pressure. Previous investigation of CPR/ACLS information and aptitudes have concentrated on medical attendants and other standard wellbeing proficient.

Need of the Study: CPR is a rescue procedure to be used when the heart and lung have stopped working. There is a wide variation in the reported incidence and outcome for out of hospital cardiac arrest. These difference are due to definition and ascertainment of cardiac arrest as well as difference in treatment after its onset. Several authors described the problem of poor performance in CPR, even when provided by medical professional. Numerous investigation 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. Dangers of Sudden Cardiac Arrest (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 year from SCA in India alone. After a cardiac arrest there they are four to six minutes before brain death and death occur. Chance 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 account for 0.55 per 1000 population. The survival rate of a sudden cardiac arrest in 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 cardiac respiratory arrest. Immediate survivors were 5 out of 6 (83.3%), out of 5 patients only 2 were alive at the end of 24th (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% (8.544%) and severe impairment in 3.1% (2-36%) of survivors from a cohort of 8 1679 pooled patients. Although, survival from per-hospital arrest is diminished in geriatric group, those who survive often have good functional recovery. Heart diseases is the world's largest killer, claiming 17.5 million lives every year. About every 29 seconds, an India dies of heart problem. As many as 20, 000 new heart patients develop every day 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 arrest happen at home, being trained to perform CPR can mark the difference between life and death for a victim. Each year almost 33, 000 peoples die from heart disease. Half of these will die suddenly, outside of the hospital because their heart stops b eating. The most common causes 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 show that cardiac arrest is becoming the number one cause of death. In fact, studies show that 80% of all cardiac arrest 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 documental in 30 (17%).At least 1to 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 group above and below 50 year (67.6%) Cardio Pulmonary Resuscitation has been used extensively in the hospital setting since its introduction over 3 decades ago. Provision of adequate chest compression remains a standard of care optimal outcome in cardiopulmonary arrest. Given the recent changes to CPR rate 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 rate associate fatigues level, 9 there is a shortage of literature on the latest CPR rate and associated

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rescuer fatigue in the hospital and pre-hospital setting. Provision of adequate chest compression remains a standard of care for optimal outcome in cardiopulmonary arrest. Given the recent change to CPR rate and a greater emphasis on faster and deeper. This has raised questions surrounding rescuer fatigues and efficacy of compressions. While a body of work has been undertaken on prevision 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 pre hospital setting. In April 2008, the American heart association took steps to simplify the process of helping victims of cardiac arrest by introduction-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. Other may be reluctant to perform mouth to mouth breathing for fear of contracting an infection. The American heart association proposed the new guideline 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 revival that CPR records, 44% of the patient initially survival following CPR, and they 1 year survival rate was 5% patients with shorter durations of CPR and those administer fewer procedures and medication during CPR survival longer than patients with prolonged CPR knowledge of the likelihood of survival following CPR for subgroup of the hospital population based on pre arrest and arrest factors can help patients, their families, and their physicians decide with compassion and conviction, in what situation 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 institution have a one-tiered defibrillation system, in which defibrillation is delivered with them, or manual defibrillation are placed around 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. 10 Various studies suggest that in out-of home cardiac arrest, bystanders, laypersons or family 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 member of the public having received CPR training in the past lack the skills and confidence needed to save lives. These to cardiac arrest. Recently American Heart Association (AHA-2010) has revised Cardiopulmonary Resuscitation (CPR) guideline in the year 2010. Many changes have been incorporated in the new recommendation to improve the outcome of patient. Some important change and Recommendation which were made are changing the Basic Life Support (BLS) sequence from Airway, Breathing, Circulation (ABC) to Circulation, Airway, Breathing (CAB), hand only CPR, emphasis on high quality CPR and post resuscitation care. Implementation of this new resuscitation guideline has been shown to improve outcomes of patients. American Heart Association (AHA 2010) has expressed needs for training health care provider about the new guideline. Nurses are an integral part of the healthcare system and are perceived to be knowledgeable in providing institutional care to the patients. Cardio-pulmonary Resuscitation (CPR) is an important medical procedure which is needed for individuals who face sudden cardiac arrest. It is

a combination of rescue breathing and chest compressions which is delivered to the victims who are thought to be in cardiac arrest. Being important members of the healthcare team, nurses are deemed to possess the basic skills and expertise which are needed to perform CPR. It is documented that a timely performed CPR can largely prevent sudden death. And it is hence considered to be an important medical procedure. Many times, the doctor may not be present near the patient and hence the nurses are expected to provide this emergency care. To perform the procedure in a meticulous manner, the nurses should be knowledgeable and they should have expertise in the procedure. Contrary to their roles, studies from different countries have reported a poor knowledge among the nurses regarding CPR. A study also reported that interventions can improve the nurses knowledge on CPR Cardio Pulmonary Resuscitation has been divided in to basic cardiac life support and advanced cardiac life support because most of the cardio pulmonary arrests occur 11 outside the hospitals and the people who initiate the resuscitation measures in these scenarios are not paramedical or medical personnel. Basic cardiac life support (BCLS), which is usually taught to general population who are the first responders who initiate the resuscitation, measures. So the researcher felt that to know the ability of students to give first aid and Cardio Pulmonary Resuscitation, to assess the coverage of first aid and Cardio Pulmonary Resuscitation training among students in all occupational categories. During the clinical experience in cardiac unit, the researcher personally experienced and witnessed lack of knowledge among Staff nurse. So the researcher decided to do a study on A Study to assess effectiveness of STP on the Knowledge regarding CPR/BLS among staff nurse

Methods
The main objective of the study is to assess the effectiveness of structured teaching programme on knowledge and practice regarding basic life support among staff nurses working in selected hospital in Bhopal. One group pretest and posttest design was used for this study. The research approach used for the study was quantitative research approach. The dependent variable in this study was knowledge and practice. The study was conducted in Cardiac care unit of Chirayu Hospital Bhopal. Sampling technique used by the investigator was Non-probability purposive sampling technique.

Assessment of Pre-Test and Post-Test Knowledge Scores Regarding Basic Life Support among Staff Nurses

Table 1: Assessment of pre-test and post-test knowledge scores regarding basic life support among staff nurses

Knowledge Levels	Pretest		Posttest	
	F	**%**	**F**	**%**
Inadequate Knowledge	27	45	3	5
Moderate Knowledge	17	28.3	24	40
Adequate Knowledge	16	26.7	33	55

The table-4.8 shows that the Assessment of knowledge score, in pre-test the majority 27(45%) of the staff nurses had inadequate followed by 17(28.3%) moderate knowledge and 16(26.7%) had adequate knowledge regarding basic life support. In comparison to pretest, the post-test knowledge level reveals the majority 33 (55%) had adequate knowledge followed by 24(40%) moderate knowledge and only 3(5%)

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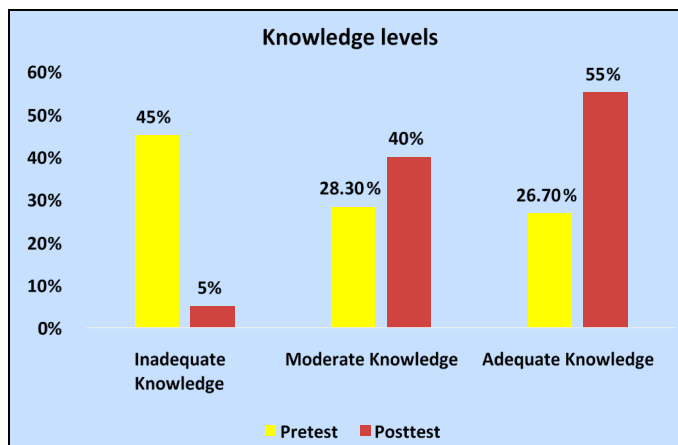had inadequate knowledge. This table reveals that there is a hike in knowledge level after the intervention.

Fig 1: Bar diagram showing assessment of pre-test and post-test knowledge levels.

Section 1: Assessment of Pre-Test and Post-Test Practice Scores Regarding Basic Life Support Among Staff Nurses

Table 2: Assessment of pre-test and post-test practice scores regarding basic life support among staff nurses

Practice levels	Pretest		Posttest	
	F	%	F	%
Inadequate Practice	19	31.7	4	6.7
Moderate Practice	25	41.7	21	35
Adequate Practice	16	26.7	35	58.3

The table-4.9 shows that the assessment of practice score, in pre-test the majority 25(41.7%) of the staff nurses had Moderate practices followed by 19(31.7%) Inadequate practices and 16(26.7%) had Adequate practices regarding basic life support. In comparison to pretest, the post-test practice level reveals the majority 35(58.3%) had good practices followed by 21(35%) average practices and only 4(6.7%) had poor practices. This table reveals that there is a positive change in practice level after the intervention.
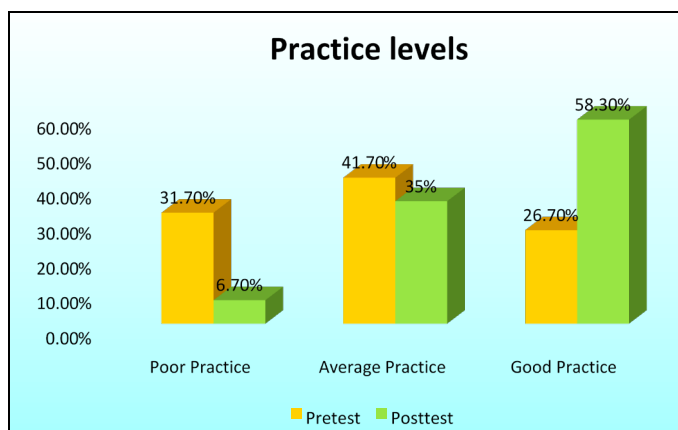

Fig 2: Bar diagram showing assessment of pre-test and post-test practice

Levels

Section 4: Effectiveness of Structure Teaching Programme on Knowledge & Practice Regarding Basic Life Support among Staff Nurses.

Table 3: Mean, standard deviation, Standard, t value regarding pre-test and post-test knowledge score among staff nurses

Knowledge score	Score	Mean	SD	T	df	P
Pretest	60	8.9	4.7	8.9	59	p<0.001
Posttest	60	13.2	3.1			

The table-4.10 represents the mean of post-test knowledge score 13.2±3.1 is greater than mean of pre-test 8.9±4.7 knowledge score regarding basic life support among staff nurses. The paired t-test (8.9) was carried out and it is found to be significant at p<0.001 level. Hence the null hypothesis rejected and research hypothesis (H1) is accepted. It is found that structured teaching programme (STP) was significantly effective in improving the staff nurse's knowledge on basic life support.
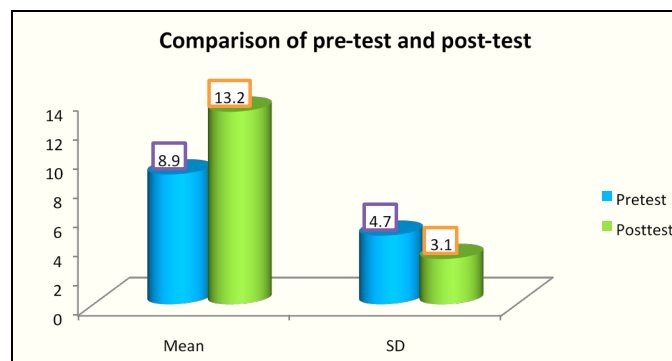

Fig 3: Cylindrical diagram showing comparison of pre-test and post-test knowledge score.

Table 4: Mean, standard deviation, Standard, t value regarding pre-test and post-test practice score among staff nurses

Practice score	Score	Mean	SD	T	df	P
Pretest	60	7.5	3.2	9.5	59	p<0.001
Posttest	60	10.3	2.7			

The table-11represents the mean of post-test practice score 10.3±2.7 is greater than mean of pre-test 7.5±3.2practice score regarding basic life support among staff nurses. The paired t-test (9.5) was carried out and it is found to be significant at p<0.001 level. Hence the null hypothesis rejected and research hypothesis (H2) is accepted. It is found that structured teaching programme (STP) was significantly effective in improving the staff nurse's practices regarding basic life support.
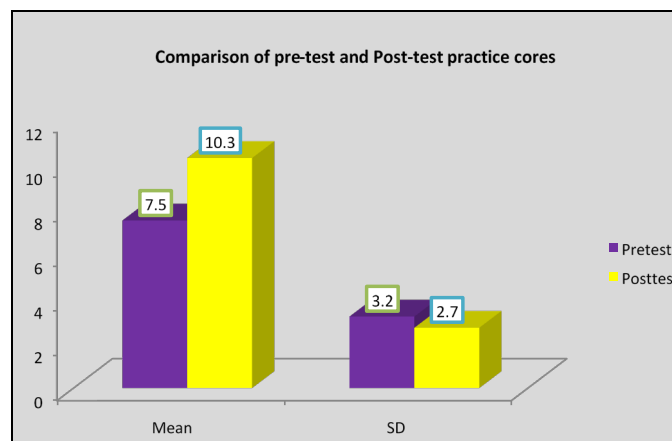

Fig 4: Bar diagram showing comparison of pre-test and post-test Practice score.

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Section 5: Association between Pre-Test Knowledge & Practice Score Regarding Basic Life Support among Staff Nurses with Selected Demographic Variables.

Table 5: Chi-square analysis to find out the association between pre-test knowledge of staff nurses with their selected demographic variables

Demographic variables	Knowledge Levels			x2	df	P
	Inadequate	Moderate	Adequate			
1) Age (in year)						
20-30	10	4	4	4.1	6	12.59
31-40	10	6	5			
40-50	4	4	6			
More than 50	3	3	1			
2) Gender						
Male	11	6	4	1.1	2	5.99
Female	16	11	12			
3) Religion						
Hindu	17	11	6	5.8	6	12.59
Muslim	6	2	6			
Christian	3	4	3			
Other	1	0	1			
4) Educational Qualification						
GNM	5	10	6	28.3	4	9.49**
Bsc nursing	10	13	0			
Post basic bsc nursing	5	5	6			
5) Work experience						
< 1 year	9	3	5	8.9	6	12.59
1-5 year	11	5	4			
6-10 years	5	5	1			
> 10 years	2	4	6			
6) Monthly income						
≤ 10000	22	9	6	8.9	2	5.99**
> 10000	5	8	10			
7) Marital Status						
Married	20	8	8	4.1	2	5.99
Unmarried	7	9	8			

**significant at P<0.05

The data Table-4.12 Shows that Chi-square value in pre-test knowledge scores with the selected demographic variables like educational qualification ($x^2 = 31.8$, p=0.05) and monthly income ($x^2 = 8.9$, p=0.05) were significant. Remaining variables like age (4.1), gender (1.1), religion (5.8), work experiences (8.9), marital status (4.1) were not significant (p>0.05). Out of 7 demographic variables, 2 were significant and 5 were not significant, hence the null hypothesis accepted and research hypothesis (H3) is rejected. There is a statically significant association between the pre-test knowledge level with their selected demographic variables like educational qualification and monthly income of staff nurses.

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Table 6: Chi-square analysis to find out the association between pre-test knowledge of staff nurses with their selected demographic variables

Demographic variables	Knowledge Levels			x2	df	P
	Inadequate	Moderate	Adequate			
1) Age (in year)						
20-30	10	4	4	4.1	6	12.59
31-40	10	6	5			
40-50	4	4	6			
More than 50	3	3	1			
2) Gender						
Male	11	6	4	1.1	2	5.99
Female	16	11	12			
3) Religion						
Hindu	17	11	6	5.8	6	12.59
Muslim	6	2	6			
Christian	3	4	3			
Other	1	0	1			
4) Educational Qualification						
GNM	5	10	6	28.3	4	9.49**
Bsc nursing	10	13	0			
Post basic bsc nursing	5	5	6			
5) Work experience						
< 1 year	9	3	5	8.9	6	12.59
1-5 year	11	5	4			
6-10 years	5	5	1			
> 10 years	2	4	6			
6) Monthly income						
≤ 10000	22	9	6	8.9	2	5.99**
> 10000	5	8	10			
7) Marital Status						
Married	20	8	8	4.1	2	5.99
Unmarried	7	9	8			

**Significant at P<0.05

The data Table-4.12 Shows that Chi-square value in pre-test knowledge scores with the selected demographic variables like educational qualification ($x^2 = 31.8$, p=0.05) and monthly income ($x^2 = 8.9$, p=0.05) were significant. Remaining variables like age (4.1), gender (1.1), religion (5.8), work experiences (8.9), marital status (4.1) were not significant (p>0.05). Out of 7 demographic variables, 2 were significant and 5 were not significant, hence the null hypothesis accepted and research hypothesis (H_3) is rejected. There is a statically significant association between the pre-test knowledge level with their selected demographic variables like educational qualification and monthly income of staff nurses.

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Table 7: Chi-square analysis to find out the association between pre-test practice of staff nurses with their selected demographic variables

Demographic variables	Practice levels			x2	df	P
	Poor	Average	Good			
1) Age (in year)						
20-30	6	8	4	2.9	6	12.59
31-40	7	9	5			
40-50	3	5	6			
More than 50	3	3	1			
2) Gender						
Male	9	7	5	1.9	2	5.99
Female	10	18	11			
3) Religion						
Hindu	12	14	8	4.1	6	12.59
Muslim	2	7	5			
Christian	4	4	2			
Other	1	0	1			
4) Educational Qualification						
GNM	6	8	7	15.2	4	9.49**
Bsc nursing	7	14	2			
Post basic bsc nursing	5	10	1			
5) Work experience						
< 1 year	7	5	5	5.5	6	12.59
1-5 year	5	11	4			
6-10 years	5	4	2			
> 10 years	2	5	5			
6) Monthly income						
≤ 10000	15	17	5	9.1	2	5.99**
> 10000	4	8	11			
7) Marital Status						
Married	12	15	9	0.2	2	5.99
Unmarried	7	10	7			

Significant at P<0.05

The data Table-4.13 Shows that Chi-square value in pre-test practice scores with the selected demographic variables like educational qualification (x^2 = 18.4, p=0.05) and monthly income (x^2 = 9.1, p=0.05) were significant. Remaining variables like age (2.9), gender (1.9), religion (4.1), work experiences (5.5), marital status (0.2 were not significant (p>0.05). Out of 7 demographic variables, 2 were significant and 5 were not significant, hence the null hypothesis accepted and research hypothesis (H_3) is rejected. There is a statically significant association between the pre-test practice level with their selected demographic variables like educational qualification and monthly income of staff nurses.

Conclusion
Thus, this chapter dealt with the statistical analysis and interpretation of data. The objectives of the study were attained through various statistical method and interpretation. The samples characteristics were dealt with frequencies and percentages. Descriptive statistics was used to find out the mean, median and SD.
Inferential statistics was computed to find out the association

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