Effectiveness of planned teaching programme on prevention of post operative pulmonary complications among pre-operative cardio thoracic patients at tertiary care center of Andhrapradesh.

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Abstract:
AIM: A study to evaluate the effectiveness of planned teaching programme on prevention of post-operative pulmonary complications among pre-operative cardiothoracic patients.Materials and methods: A pre-experimental research with one group pre- test post -test design was used for this study. The study was conducted in the cardio-thoracic post- operative ward in SVIMS hospital, Tirupati, A.P. The population consists of pre &post operative cardio-thoracic surgery patients. The sample was 70 post-operative cardiothoracic patients who fulfilled the inclusion criteria were selected by using purposive sampling technique. The tool used for data collection was structured questionnaire.
Results: Results shows that 42(60.0%) werehaving inadequate knowledge, 24(34.39%)were havingmoderate knowledge, 4(5.70%)adequate knowledge inpre- testand47(67.10%)have adequate knowledge,19(27.10%)have moderate knowledgeand4(5.70%)haveinadequate knowledgeinthepost test.Thepre-testmeanscores21.40±7.04hadincreasedmean scoreto36.21±6.07intheposttestwhichindicatesthatplannedteaching was effectivein increasing knowledgelevels ofpost-operativecardiothoracicpatients.
Conclusion: The results from this study reveals that planned teaching programme is effective in increasing the knowledge regarding prevention of post-operative pulmonary complications among post-operative cardiothoracic patients. The findings of the study revealed a significant increase in the post test knowledge scores after structure teaching programme.
Key words: Pulmonary complications.

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I. Introduction

The various components of the cardiac and respiratory system are airway lungs,chest wall,intercostal muscles diaphragm and neural pathway to and from these various components are subjected to damage caused by a variety of processes associated with cardiac surgery and cardiopulmonary bypass(1).

Cardiac surgery through either a sternotomy or thoracotomy, lung surgeries are lobectomy has deleterious effects on the functions of the muscle pump and the chest wall (2). Additionally, phrenic nerve damage resulting from cold topical solution applied inside the pericardium may cause mechanical problems (3). Left side cardiac detention or elevated pressure may cause alveolar edema; allergic reaction to drugs eg; protamine may increase capillary permeability leading to alveolar folding (4).

The most of the significant complications include.
- Atelectasis.
- Infection,including bronchitis and pneumonia.
- Exerbation of underlying chronic lung diseases,ARDS
- Bronchospasm.
- Age>50 years.
- Smoking history.
- Heart failure.

Postoperative pulmonary complications can be considered as a composite outcome measures according to European joint task force published guidelines for Peri- opearative clinical outcome, it has been estimated that world wide>230 million major operations occur annually. The incidences of PPC in major surgery ranges from <1 to 23% several studies have shown pulmonary complications to be more common than cardiac complications.in Africa patients developed postoperative pulmonary complications were 88(21.7%) of which

60.2% were emergency patients, the majority were postoperative pneumonia 75(85.2%) were emergency patients, followed by bronchitis 10(11.4), respiratory failure 1(1.1%),laryngeal edema 1(1.1%) &heamothorax 1(1.1%) **(5).**

II. Materials And Methods:

The research approach used for the study was quantitative experimental approach. The research design used was pre experimental one group pre testpost test design. The study was conducted in cardiothoracic post-operative ward, SVIMS, Tirupati. Post-operative cardiothoracic patients whose post- operative is more than72hrs, willing to participate and available at the time of data collection were included and patients who are on mechanical ventilator, unconscious, altered sensory function and medial, nursing and others health related personnel were excluded from the study.70 post-operative cardiothoracic patients are selected as sample by using non-probability purposive sampling technique. Data collection was done by using self structured questionnaire. The questions were framed on general information, respiratory care, deep breathing & coughing exercises, spirometry exercises, foot & leg exercises, ambulation, preventive measures on post-operative pulmonary complications with yes or no options. In the questionnaires yes carries '1 ' mark, false carries '0' mark. Internal consistency of the tool was established by test retest method using interclass correlation r=0.89. the tool was found to be reliable.

III. Stastical Analysis:

It was planned to analysis the data by using descriptive and inferential statistics. Frequency and percentage distribution was used for demographic variables. Mean and standard deviation were used for selected demographic variables, level of knowledge on prevention of post-operative pulmonary complications among post-operative cardiothoracic patients in pre & post-test. Chi-square test was used to know the association between the level of knowledge on prevention of post-operative pulmonary complications in pre and post-tests with their selected demographic variables paired 't' test was used for comparing pre and post test scores of knowledge variables. One way ANOVA was used to compare the mean variance of demographic variables with knowledge on prevention of post-operative pulmonary complications among post-operative cardiothoracic patients.

Ethical considerations:

Thestudy conducted was approval by scientific research ethics committee faculty of nursing, SVIMS University. Participants were given explanation about the purpose of the study and they were also informed that they could withdraw from the study at any time before the completion of the study. Participants who agreed to complete the study were asked to sign a consent form. Confidentiality of participants was assured and the data were accessed only by the investigator involved in the study.

Description of the tool:
The tool consists of 2 sections:

Section-I: Consists of questions related to demographic data.

Section-II :consists of **structured questionnaire to assess** the knowledge on prevention of post operative pulmonary complications among cardiothoracic patients. It consists of 45 dichotomous questions based on general information, respiratory care, deep breathing & coughing exercises, spirometry exercises, foot & leg exercises, ambulation, preventive measures on post-operative pulmonary complications with yes or no options.

Data collection procedure:

The investigator obtained prior permission from the head of the department of cardiothoracic surgery, SVIMS, Tirupati to conduct the study. The investigator selected the samples by non-probability purposive sampling technique. Samples were taken from nominal register and made a list, explained the purpose of the study and took a written consent from each participant and asked them to select the correct answer and put a tick mark. The data collection took 10-15 minutes for completion from each participant. After completion of data collection, with the help of A.V aids the investigator gave planned teaching programme about the meaning, risk factors, preventive measures on pulmonary complications and then an information booklet was given to all participants for future reference. After 7 days of pre-test and planned teaching, post test was conducted to each participant and collected the responses to each question, and thanked the participants for their willing and co-oeration foe all 70 samples.

IV. Results
Table: 1 Frequency and percentage distribution of demographic variables among post-operative cardiothoracicpatients on p r e v e n t i o n o f p u l m o n a r y c o m p l i c a t i o n s.

N=70

S.No	Demographicvariables	Frequency(f)	Percentage(%)
1.	**Age(inyears)**		
	a. >30years	17	24.3
	b. 31-40years	8	11.4
	c. 41-50 years	15	21.4
	d. 51-61years	13	18.6
	e. 61and above years	17	24.3
2.	**Gender**		
	a. Male	43	61.4
	b. Female	27	38.6
3.	**Religion**		
	a. Hindu	54	77.1
	b. Muslim	8	11.4
	c. Christian	8	11.4
4.	**Education**		
	a. Illiterate	27	38.6
	b. Primaryeducation	12	17.1
	c. Secondaryeducation	10	14.3
	d. Intermediate education	13	18.6
5.	**Occupation**		
	a. Student	10	14.3
	b. Selfemployee/labour	40	57.1
	c. Unemployee	2	2.9
	d. Employee	14	20
	e.Home Maker	4	5.7
6.	**Marital status**		
	a. single	6	8.6
	b. married	48	68.6
	c. Divorced/separated	3	4.3

7.	**Body mass index**		
	a. Below normal	7	10
	b. Normal	34	48.6
	c. Overweight	24	34.3
	d. Obese	5	7.1
8.	**Habit of smoking**		
	8.1 Yes	16	22.9
	8.2 No	54	77.1
	8.1 If yes duration		
	a.Below 5yrs	6	37.5
	b.6-10yrs	6	37.5
	c.above 10yrs	4	25
9	**Habit of alchoholi**		
	a. yes	12	17.1
	b. No	58	82.9
	9.1If yes duration		
	a. Below 10yrs	5	41.7
	b. 10-15 yrs	5	41.7
	c. Above 15yrs	2	16.7

No	Item	Frequency	Percentage
10	**Habit of tobacco chewing** a. Yes b. No	7 63	10 90
	10.1If yes duration a. <5 yrs b. >5yrs	2 5	28.6 71.4
11.	**Suffering chronic illness** a. Yes b. No	8 62	11.43 88.57
	11.1 If yes type of illness a. Diabetes, b. Hamarroids c. HTN	2 1 3 2	, 25 12.5
12	**History of recent hospitalization** **a.Yes** **b.No**	22 48	31.4 68.6
13	**If yes…..** **13.1 specify the cause** a.chest pain b.fever c.hemmorhoids d.SOB e.SOB,cough	13 3 1 2 3	59.1 13.6 4.5 9.1 13.6
	13.2.duration of hospital in days a. 1day b. 2 days c. 3days d.4days e.5days f.6 days	2 1 1 8 7 3	9.1 4.5 4.5 36.4 31.8 13.6
14.	**Source of information** 14.1 news paper 14.2internet 14.3medical & nursing personnel 14.4no source	2 17 20 31	2.9 24.3 28.6 44.3

Table .1 shows that17(24.3%) belongs to the age group of below 30yers& above 61yers,males are 43 (61.4),hindhu 54(77.1%),illiterate 27 (38.6%),self employee/labour 40(57.1%) married 48 (68.6%)BMI 34(48.6%), no smoking habits 54(77.1%),duration of smoking 6(37.3%) below 5yrs & 6-10yrs,alchoholism 58(82.9%), duration of smoking 5(41.7%) are below 10yrs & 10-15yrs, no habit of tobacco 63 (90%),duration of smoking above 5yr, 5(71.4%), suffering from no chronic illness 62(88.57%) Type of illness 2(25%), no history of recent hospitalisation 48(68.6%),specific cause of hospitalisation 13(59.1%), duration of hospitalisation 8(36.4%), source of information 20(28.6%).

Table2:FrequencyandpercentagedistributionofpretestKnowledgeonprevention of post- operative pulmonary complications.

Thelevel ofknowledgeweredivided into 3 categories:

0-50%-Inadequate knowledge

51 – 75%- Moderateknowledge

>76%-Adequateknowledge

n=70

Sl.no	Knowledge on pulmonary complications	Frequency (f)	Percentage (%)
1	Inadequate knowledge	42	60
2.	Moderate knowledge	24	34.39
3.	Adequate knowledge	4	5.7

shows that regarding general information (44)62.90%,were having   inadequate knowledge &(21)30.00% were having moderate knowledge, (5) 7.10% were having adequate knowledge on prevention of pulmonary complications, as shown in in the figure 1

Figure 1: PercentagedistributionofpretestKnowledgeonprevention of post- operative pulmonary complications

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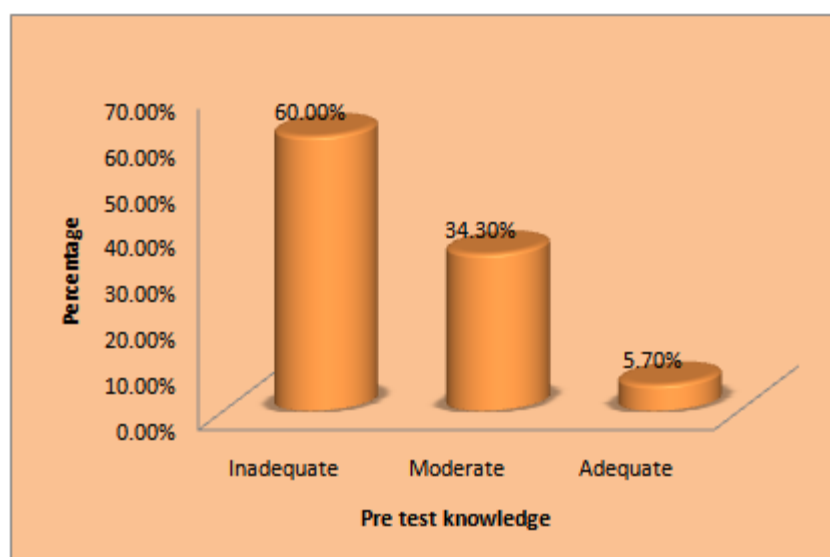
Table3:Frequencyandpercentagedistributionofpost- testKnowledgeonprevention of pulmonary complications

n=70

Sl.no	Knowledge on pulmonary complications	Frequency (f)	Percentage (%)
1	Inadequate knowledge	4	5.7
2.	Moderate knowledge	19	27.1
3.	Adequate knowledge	47	67.1

Table :shows that 47(67.1%) were having adequate knowledge,19(27.1%) were having moderate knowledge and 4(5.7%) having in adequate knowledge as shows in the figure no 2

Figure no 2::Frequency and percentage distribution of post- test Knowledge on prevention of pulmonary complications
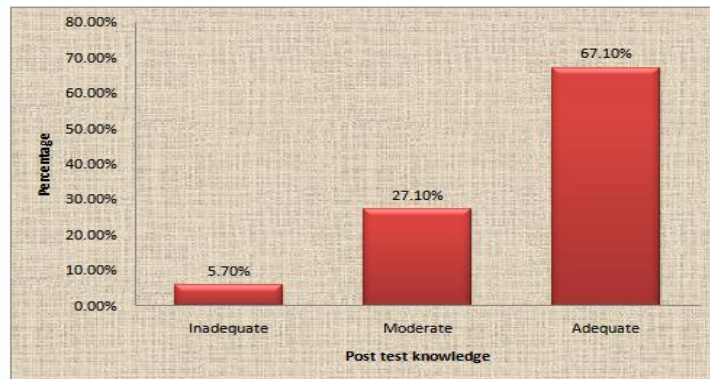
Thepre-testmeanscores21.40±7.04hadincreasedmean scoreto36.21±6.07inthepottestassessment, The association of demographic variables with level of knowledge among pre pre-operative cardiothoracic thoracic patients marital status, chronic illness , source of information regarding prevention of pulmonary complications shows significant association with pretest knowledge at $p<0.05$ level, Education, occupation, habit of alchoholism shows significant association with pre test knowledge at $p<0.01$ level & other variables were not having any significant association with pre test knowledge levels on prevention of pulmonary complications.

The finding of comparison of mean variance among the demographic variables with the knowledge level among pre-operative cardiothoracic patients, age, education, occupation, BMI, habit of smoking, source of information regarding prevention of pulmonary complications shows significant association with post- test knowledge at $p<0.05$ level, duration of smoking, shows significant association with post - test knowledge at $p<0.01$ level & other variables were not having any significant with post test knowledge levels.

Figure no 3: Mean and standard deviation of pre test and post test knowledge among cardiothoracic patients.
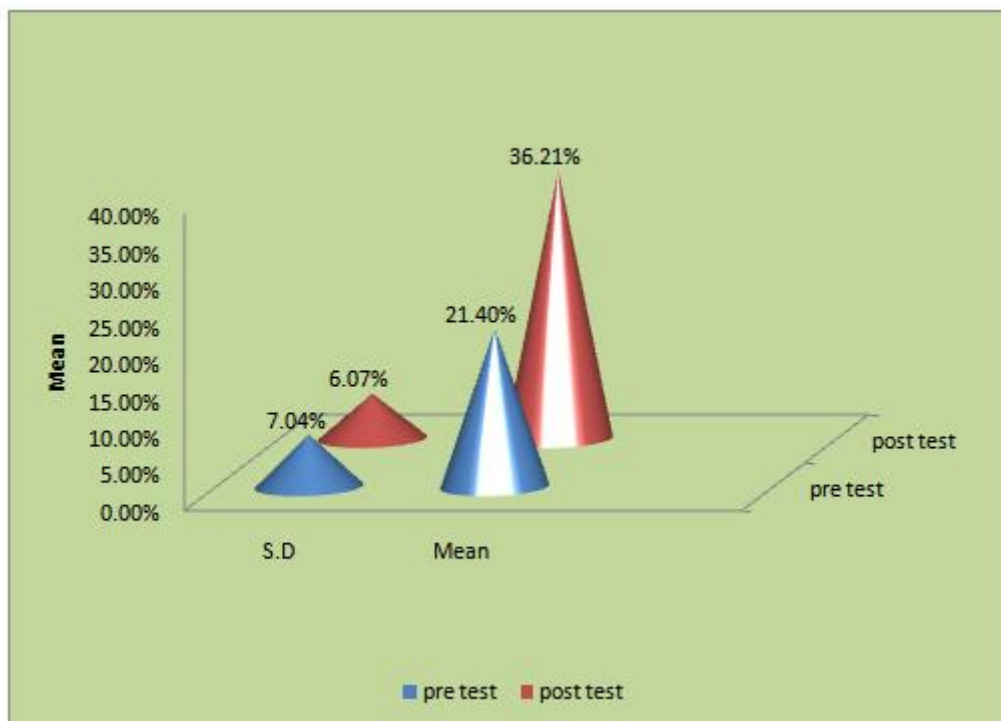
The first objective was to assess knowledge on prevention of post operative pulmonary complications among pre operative cardiothoracic patients. Before teaching program the study findings revealed that 44(62.90%) patients have in adequate knowledge,21(30.00%) had moderate knowledge in pre-test.

Michael R. Cassidy, MD[1]; Pamela Rosenkranz[2] (2014)

Before implementation program, incidence of postoperative pneumonia was 2.6%, falling to 1.6% after its implementation, and risk-adjusted outcomes fell from an OE(observed % expected) ratio of 2.13 to an OR of

1.58. The incidence of unplanned intubations was 2.0% before I COUGH and 1.2% after I COUGH, with risk-adjusted outcomes decreasing from an OE ratio of 2.10 to an OR of 1.31.

The second objective of the study was to evaluate the effectiveness of planned teaching program on prevention of pulmonary complications among pre operative cardiothoracic patients, by comparing of pre test and post test knowledge knowledge levels. The study findings revealed in pre test the mean score was 21.40 ± 7.04 & in thepost test the mean score was 36.21 ± 6.07 & 't'-value is 15.927 whichisstatistically significantatp<0.01 level.Theresultindicatesthatthere issignificantdifference betweenpre andposttest knowledgeamongpost operative cardiothoracic patients.

Thus the null hypothesis H_{01} which states that there is no significant difference betweenmeanpre andposttestknowledge score of Post-operative cardiothoracic patients on prevention of pulmonary complicationswas rejected.

Anil Raj A[1], B V Kathyayani[2](2016)

The mean pre-test knowledge score was 7.48 ± 2.35 and the mean post- test knowledge score was 22 ± 3.51. The pre-test practice level of majority of the patients was inadequate (46%) whereas the post-test practice level was adequate for majority of patients (64%). The findings of the study revealed that there was significant improvement in knowledge (t=15.66, P<0.05) scores.

The third objective of the study was to find out the association between the post test and pre test level of knowledge with demographic variable amongpost operative cardiothoracic patients.

The association of demographic variables with level of knowledge among post- operative patients in pre test revealed that marital status, chronic illness , source of information regarding prevention of pulmonary complications shows significant association with pretest knowledge at p<0.05 level, Education, occupation, habit of alcoholism shows significant association with pre test knowledge at p<0.01.

The findings of comparison ofmean variance amongthedemographicvariable with the knowledge levels among pre operative cardiothoracic patients, age, education, occupation, BMI, habit of smoking, source of information regarding prevention of pulmonary complications shows significant association with post test knowledge at p<0.05 level, duration of smoking, shows significant association with post test knowledge at p<0.01 level.

Erik Hj Hulzeobos[1],Nico LU Van Meeteren[2] et al,.(2003)

Preoperative risk factors for developing PPCs were an age of >70 years, productive cough, diabetes mellitus, and a history of cigarette smoking. Protective factors against the development of PPCs were a predicted inspiratory vital capacity of >75% and a predicted maximal expiratory pressure of >75%. These risk and protective factors were included in the model (sensitivity>87% and specificity 56%), and a sum score for its clinical use was
Generated.

V. Conclusion

Majority of post operative cardiothoracic patients had gained adequate knowledge on prevention of pulmonary complications among post-operative cardiothoracic patients after planned teaching program in the post test assessment.

References

[1]. *Lee J, Larson R, Buckley J et al. Airway maintenance inmorbidly obese. Anesth Rev 1980; 7: 33.*
[2]. *Warner DO. Preventing postoperative pulmonary complications: the role of anaesthesiologist. Anesthesiology2000; 92: 1467-72.*
[3]. *Smetana GW. Preoperative pulmonary evaluation. N Engl J Med 1999; 340: 937-44.*
[4]. *Pedersen T, Viby-Mogensen J, Ringsted C. Anaesthetic practice and postoperative pulmonary complications. ActaAnaesthesiolScand 1992; 36: 812-18.*
[5]. *Warner MA, Offord KP, Warner ME, Lennon RL, ConoverMA, Jannson-Schumacher U. Role of preoperativecessation of smoking and other factors in postoperativepulmonary complications, a blinded prospective study ofcoronary artery bypass patients. Mayo ClinProc 1989; 64:609-16.*
[6]. *Strandberg A, Tokics L, Brismar B, Lundquist H, HedenstienaG. Constitutional factors promoting development of atelectasisduring anaesthesia. ActaAnaesthesiolScand 1987; 31: 21-24.*