

 <p>ISSN NO. 2320-5407</p>	<p>Journal Homepage: -www.journalijar.com</p> <p>INTERNATIONAL JOURNAL OF ADVANCED RESEARCH (IJAR)</p> <p>Article DOI:10.21474/IJAR01/11732 DOI URL: http://dx.doi.org/10.21474/IJAR01/11732</p>	 <p>INTERNATIONAL JOURNAL OF ADVANCED RESEARCH (IJAR) ISSN 2320-5407</p> <p>Journal Homepage: http://www.journalijar.com Journal DOI:10.21474/IJAR01</p>
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RESEARCH ARTICLE

A STUDY TO ASSESS THE EFFECT OF NURSING INTERVENTIONS REGARDING INTER COSTAL DRAINAGE CARE IN A VIEW TO PREPARE A PROTOCOL FOR NURSES.

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Manuscript Info

Manuscript History

Received: 15 July 2020

Final Accepted: 18 August 2020

Published: September 2020

Key words:-

Assess, Nursing Intervention, Inter Costal Drainage Care, Protocol

Abstract

A descriptive study was done to assess the effect of Nursing Interventions regarding Inter Costal Drainage Care in a view to prepare a protocol for Nurses. The present study was done by using Survey Method to assess the effect of nursing interventions regarding inter costal drainage care. As per the 'Dorothy Orem Self Care Deficit', a conceptual framework was made. Samples were selected from the hospital by Non-Probability Purposive Sampling Method. The sample consisted of 60 patients. The study included demographic variable such as age, gender, duration of hospitalization, previous knowledge about disease condition. And observation check list and numerical pain scale. At the beginning of the research a survey was done and the patients with intercostal drainage care was introduced by the investigator. They were explained about the purpose of the study and were assured the about confidentiality of the information between the investigator and the respondent only. Everyday 10-15 samples were taken by the investigator before data collection the consent was taken from patients. Data was collected and analysed using Descriptive and Inferential Statistics. The level of significance was tested by using paired t-test.

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Introduction:-

There are many life-threatening events that the patient undergoes in his/her own life time. Even during their stay in the hospital during the process of medical treatment they can go through many crucial situations and events. One among them is when the patient is on the Inter Costal drainage system as part of the post-operative treatment. Caring for a patient with a Chest tube is a nursing challenge. By logical system of assessment, the critical care nurse will be able to master the art of chest drainage with little difficulty. This will enhance his/her skill in assessment to ensure proper nursing care in the aspect of chest drainage.

The Thoracic Society Guidelines for the insertion of a chest drain state that in current practice chest drains are used in many different hospital settings and doctors and nurses in most specialties need to be capable of their safe insertion. Incorrect placement of a chest drain can lead to significant morbidity and even mortality. Several adverse incidents related to the insertion and management of chest drains, the need for Trust guidance was identified. These guidelines are aimed at the insertion and care of chest drains in the adult patient in a hospital environment.

A survey was conducted about major complications of intercostal chest drainage insertion. In this survey a Questionnaire was sent to 148 acute hospital trust, enquiring about current practice and any adverse incidents related

to chest drains from 2003-2008.67% of responding trusts had encountered major complications of intercostals drainage such as haemorrhage, infection, lung re-expansion and pulmonary oedema. Thus, the survey raised the importance of training health care staff regarding chest tube management

Problem Statement

A study to assess the effect of Nursing Intervention regarding Inter costal drainage care in a view to prepare a protocol for Nurses working in selected hospitals.

Objectives:-

1. To evaluate effect of Nursing Interventions regarding Inter costal drainage care.
2. To prepare a protocol for Nurses working in selected hospitals.

Assumptions

1. Inter costal drainage care may vary from Nursing staff to other nursing staff.
2. There can be chance of infection.

Methodology:-**Research approach:**

Survey approach

Research design:

Cross sectional research design.

Setting of the study:

Dr. D Y Patil Hospital Pimpri Pune

Research variables

1. Dependent variables: In the present study, independent variable was Nursing intervention.
2. Independent variables: In present study, dependent variables were inter costal drainage care.

Demographic variables:

This included age, gender, duration of hospitalization, Previous knowledge about disease condition.

Target Population:

The target population is aggregate of cases about which the researcher would like to generalize.

Accessible Population

The accessible population for this study were the subjects having intercostal drainage.

Sample Size

The sample size of the present study was 60 subjects with intercostal drainage.

Sampling Technique

In this study purposive sampling technique was adopted to select the subjects. Purposive sampling is a non-probability sampling technique where subjects were chosen to be part of the sample with a specific purpose in mind and according to the study objectives.

Criteria for Samples Selection**Inclusion Criteria**

Subjects who The patients admitted with inter costal drainage .

1. Those who understood English, Hindi, Marathi.

Exclusion Criteria

1. Those who were not willing to participate

2. Those who were not willing to participate

Description of Tool

Part I: Socio demographic variables.

Information on socio demographic variable of the subjects contains three items, which included Age, Gender, Duration of hospitalization, Previous knowledge of disease condition.

Part II: Observation check list.

Part III: Numerical Pain Scale.

Reliability

In this study, the reliability of the tool has been assessed by the bio- medical engineer of stethoscope and sphygmomanometer and reliability was assessed by using Inter rator Reliability Method. Cohen's Kappa test was used and reliability result was found 0.98. Hence, the tool is reliable.

Data collection procedure

Official permission was obtained from the authorities from the Dr. D. Y. Patil Hospital Sant Tukaram Nagar, Pimpri Chinchwad Pune 18. The data was collected at Dr. D. Y. Patil hospital for for 3 week period at data was collected for 5 days At the starting of the session they were explained about the purpose of the study and were assured about confidentiality of the information between the investigator and the respondent. The data collection was done for 5 days each Everyday 10-15 samples were taken by investigator. Before data collection the consent was taken from patients. After permission, investigator started the procedure for data collection. Each sample took 15-20 minutes for data collection. Data is collected from 60 sample.

Plan for data analysis:

The data obtained was analyzed using descriptive and inferential statistics based on objectives.

Results:-

Section I:

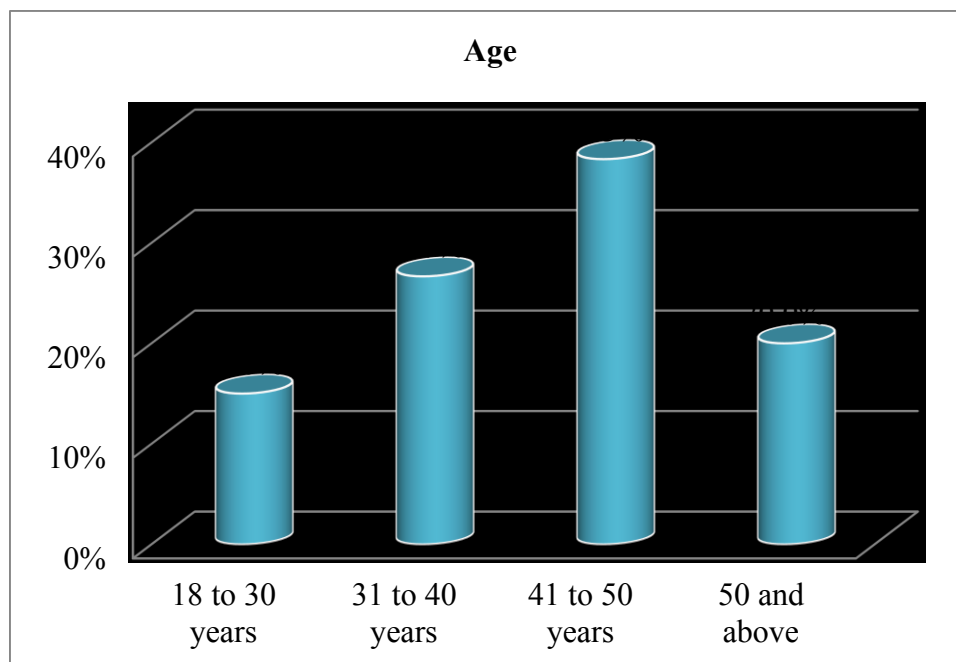
Description of samples (patients) based on their personal characteristics in terms of frequency and percentage

Table 1:- Description of samples (patients) based on their personal characteristics in terms of frequency and percentage =60.

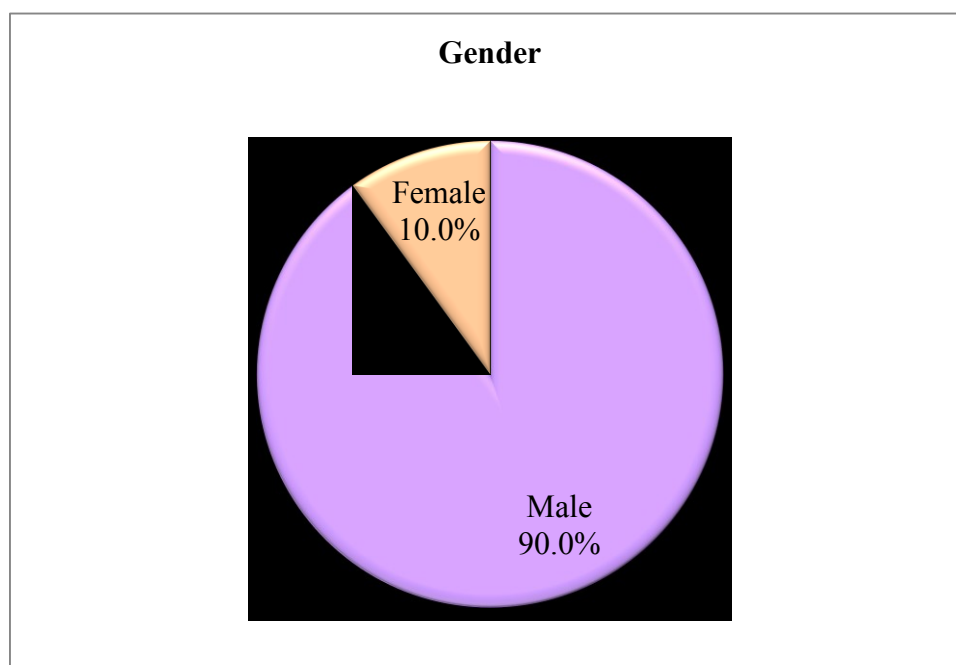
Demographic variable	Freq	%
Age		
18 to 30 years	9	15.0%
31 to 40 years	16	26.7%
41 to 50 years	23	38.3%
50 and above	12	20.0%
Gender		
Male	54	90.0%
Female	6	10.0%
Duration of Hospitalization		
1 to 5 days	7	11.7%
5-10 days	39	65.0%
10 days and above	14	23.3%
Previous Knowledge of respiratory disease		
Yes	2	3.3%
No	58	96.7%

Table No 1 shows that 15% of the patients had age 18-30 years, 26.7% of them had age 31-40 years, 38.3% of them had age 41-50 years and 20% of them had age 50 years and above. 90% of them were of male gender and 10 percent were of female gender. And it shows that 11.7% patients were admitted for 1 to 5 days and 65.0% were admitted for

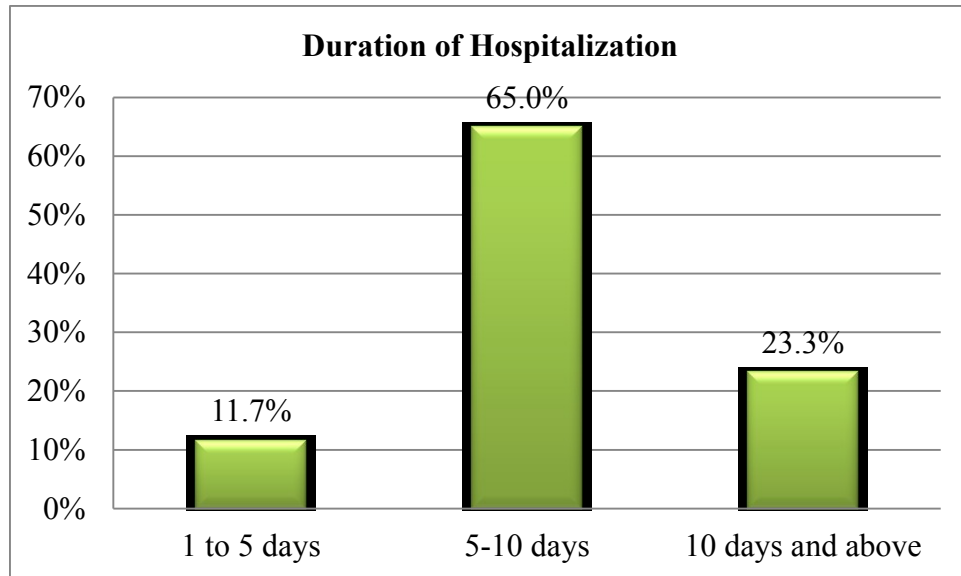
5 to 10 days and 23.3% of the patient were admitted for 10 days and above. And only 3.3% of the patient had the previous knowledge about hospitalization and remaining had no any previous knowledge about it.



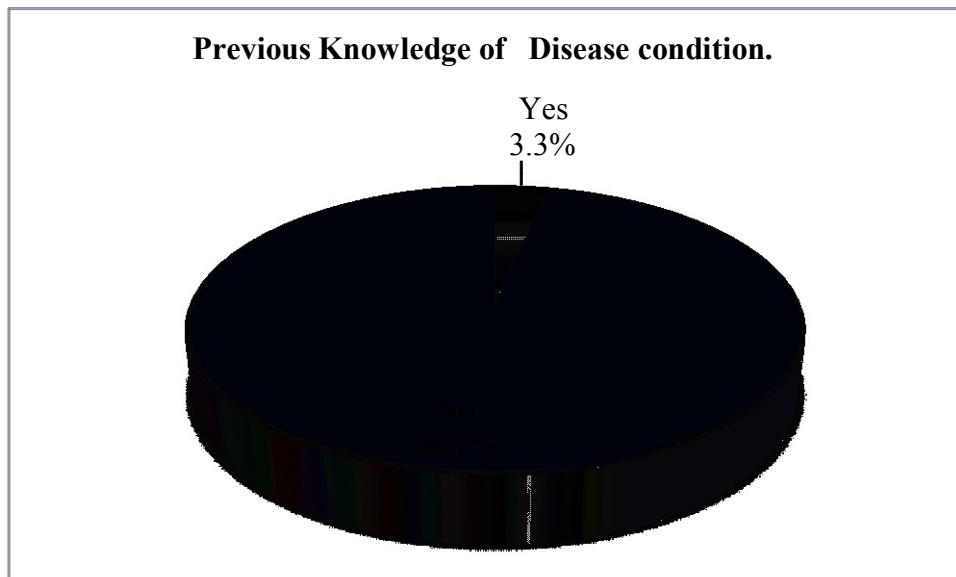
The above graph showcases that, according to age 15% of the patients had age 18-30 years, 26.7% of them had age 31-40 years, 38.3% of them had age 41-50 years and 20% of them had age 50 years and above.



The above graph showcases that, according to gender majority of 90% of the patients were males and 10% of them were females.



The above graph showcases that, according to duration of hospitalization mostly 65% of them had hospitalization for 5 to 10 days, 11.7% of them had hospitalization for 1 to 5 days and 23.3% of them were hospitalized for more than ten days.



The above graph showcases that, according to previous knowledge regarding disease condition mostly had 3.3% of them had previous knowledge of disease condition.

Section II

Analysis of data related to the effect of Nursing Intervention regarding Inter costal drainage care

n =60

Table 2:- Effect of Nursing Intervention regarding Inter costal drainage care on respiratory rate

Admin	Mean	SD	T	DF	p-value
Day I	26.8	1.2			
Day II	26.2	1.4	4.1	59	0.000
Day III	25.8	1.5	5.9	59	0.000
Day IV	25.8	1.5	5.9	59	0.000
Day V	25.3	1.6	7.4	59	0.000

Researcher applied paired t-test for assessment of the effect of Nursing Intervention regarding Inter costal drainage care on patients. Average respiratory rate was 26.8, 26.2, 25.8, 25.8 and 25.3. T-values for this comparison were 4.1, 5.9, 5.9 and 7.4 with 59 degrees of freedom. Corresponding p-values were of the order of 0.000 which are small (less than 0.05), Nursing Intervention regarding Inter costal drainage care is proved to be significantly effective in improving the respiratory rate.

Table 3:- Effect of Nursing Intervention regarding Inter costal drainage care on respiratory rhythm

Admin	Irregular		Regular	
	Freq	%	Freq	%
Day I	56	93.3%	4	6.7%
Day II	37	61.7%	23	38.3%
Day III	22	36.7%	38	63.3%
Day IV	17	28.3%	43	71.7%
Day V	9	15.0%	51	85.0%

On day 1, only 6.7% of the patients had regular rhythm. On day2, 38.3% of them had regular rhythm. Rhythm became regular for 63.3%, 71.7% and 85% of the patients on day3, day4 and day5. This indicates that there is remarkable improvement in the rhythm of the patients after nursing intervention regarding inter costal drainage care.

Table 4:- Effect of Nursing Intervention regarding Inter costal drainage care on respiratory depth.

Admin	Deep		Normal		Shallow	
	Freq	%	Freq	%	Freq	%
Day I	26	43.3%	8	13.3%	26	43.3%
Day II	20	33.3%	20	33.3%	20	33.3%
Day III	13	21.7%	35	58.3%	12	20.0%
Day IV	9	15.0%	45	75.0%	6	10.0%
Day V	6	10.0%	49	81.7%	5	8.3%

On day 1, only 13.3% of the patients had normal depth of respiration. On day2, 33.3% of them had normal depth of respiration. Depth of respiration normal for 58.3%, 75% and 81.7% of the patients on day3, day4 and day5. This indicates that there is remarkable improvement in the depth of respiration of the patients after nursing intervention regarding inter costal drainage care.

Table 5:- Effect of Nursing Intervention regarding Inter costal drainage care on respiratory sound.

Admin	Abnormal		Normal	
	Freq	%	Freq	%
Day I	51	85.0%	9	15.0%
Day II	38	63.3%	22	36.7%
Day III	22	36.7%	38	63.3%
Day IV	13	21.7%	47	78.3%
Day V	8	13.3%	52	86.7%

On day 1, only 15% of the patients had normal sound of respiration. On day2, 36.7% of them had normal sound of respiration. Sound of respiration became normal for 63.3%, 78.3% and 86.7% of the patients on day3, day4 and day5. This indicates that there is remarkable improvement in the respiration sound of the patients after nursing intervention regarding inter costal drainage care.

Table 6:- Effect of Nursing Intervention regarding Inter costal drainage care on pulse rate

Admin	Mean	SD	T	df	p-value
Day I	75.4	2.0			
Day II	74.8	2.1	3.6	59	0.000
Day III	74.3	2.0	5.0	59	0.000
Day IV	74.2	2.0	5.1	59	0.000
Day V	74.2	2.0	5.1	59	0.000

Researcher applied paired t-test for assessment of the effect of Nursing Intervention regarding inter costal drainage care on patients. Average pulse rate was 75.4, 74.8, 74.3, 74.2 and 74.2. T-values for this comparison were 2.0, 2.1, 2.0, 2.0 and 2.0 with 59 degrees of freedom. Corresponding p-values were of the order of 0.000 which are small (less than 0.05), Nursing Intervention regarding Inter costal drainage care is proved to be significantly effective in improving the pulse rate.

Table 7:- Effect of Nursing Intervention regarding Inter costal drainage care on pulse rhythm

Admin	Irregular		Regular	
	Freq	%	Freq	%
Day I	55	91.7%	5	8.3%
Day II	42	70.0%	18	30.0%
Day III	26	43.3%	34	56.7%
Day IV	17	28.3%	43	71.7%
Day V	17	28.3%	43	71.7%

On day 1, only 8.3% of the patients had regular pulse rhythm. On day2, 30% of them had regular pulse rhythm. Pulse rhythm became regular for 56.7%, 71.7% and 71.7% of the patients on day3, day4 and day5. This indicates that there is remarkable improvement in the pulse rhythm of the patients after nursing intervention regarding inter costal drainage care.

Table 8:- Effect of Nursing Intervention regarding Inter costal drainage care on pulse tension.

Admin	Abnormal		Normal	
	Freq	%	Freq	%
Day I	52	86.7%	8	13.3%
Day II	40	66.7%	20	33.3%
Day III	23	38.3%	37	61.7%
Day IV	10	16.7%	50	83.3%
Day V	6	10.0%	54	90.0%

On day 1, only 13.3% of the patients had normal tension. On day2, 33.3% of them had normal tension. 61.7%, 83.3% and 90.0% of the patients had normal tension on day3, day4 and day5. This indicates that there is remarkable improvement in tension of the patients after nursing intervention regarding inter costal drainage care.

Table 9:- Effect of Nursing Intervention regarding Inter costal drainage care on systolic blood pressure.

Admin	Mean	SD	T	df	p-value
Day I	136.5	6.8			
Day II	134.0	7.9	3.8	59	0.000
Day III	130.8	7.4	6.1	59	0.000
Day IV	129.8	7.0	6.7	59	0.000
Day V	129.8	7.0	6.7	59	0.000

Researcher applied paired t-test for assessment of the effect of Nursing Intervention regarding inter costal drainage care on systolic blood pressure of patients. Average systolic blood pressure was 136.5, 134.0, 130.8, 129.8 and 129.8. T-values for this comparison were 3.8, 6.1, 6.7 and 6.7 with 59 degrees of freedom. Corresponding p-values were of the order of 0.000 which are small (less than 0.05), Nursing Intervention regarding inter costal drainage care is proved to be significantly effective in improving the systolic blood pressure of patients.

Table 10:- Effect of Nursing Intervention regarding Inter costal drainage care on diastolic blood pressure

Admin	Mean	SD	T	df	p-value
Day I	93.8	5.2			
Day II	92.0	6.3	3.6	59	0.000
Day III	89.3	6.9	5.9	59	0.000
Day IV	88.0	6.8	6.5	59	0.000
Day V	88.0	6.8	6.5	59	0.000

Researcher applied paired t-test for assessment of the effect of Nursing Intervention regarding inter costal drainage care on diastolic blood pressure of patients. Average diastolic blood pressure was 93.8, 92.0, 89.3, 88.0 and 88.0. T-values for this comparison were 3.6, 5.9, 6.5 and 6.5 with 59 degrees of freedom. Corresponding p-values were of the order of 0.000 which are small (less than 0.05), Nursing Intervention regarding inter costal drainage care is proved to be significantly effective in improving the diastolic blood pressure of patients.

Table 11:- Effect of Nursing Intervention regarding Inter costal drainage care on SPO2.

Admin	Mean	SD	T	DF	p-value
Day I	93.3	1.9			
Day II	93.7	1.9	2.8	59	0.003
Day III	94.2	1.7	3.9	59	0.000
Day IV	94.2	1.7	3.9	59	0.000
Day V	94.2	1.7	3.9	59	0.000

Researcher applied paired t-test for assessment of the effect of Nursing Intervention regarding inter costal drainage care on SPO2 of patients. Average SPO2 was 93.3, 93.7, 94.2, 94.2 and 94.2. T-values for this comparison were 2.8, 3.9, 3.9 and 3.9 with 59 degrees of freedom. Corresponding p-values were small (less than 0.05), Nursing intervention regarding inter costal drainage care is proved to be significantly effective in improving the SPO2 of patients.

Table 12:- Effect of Nursing Intervention regarding Inter costal drainage care on air leak

Admin	Mean	SD	T	DF	p-value
Day I	4.4	0.7			
Day II	4.1	0.9	3.3	59	0.001
Day III	3.8	0.9	5.2	59	0.000
Day IV	3.7	0.9	5.5	59	0.000
Day V	3.4	0.7	7.6	59	0.000

Researcher applied paired t-test for assessment of the effect of nursing intervention regarding inter costal drainage care on air leak. Average air leak was 4.4, 4.1, 3.8, 3.7 and 3.4. T-values for this comparison were 3.3, 5.2, 5.5 and 7.6 with 59 degrees of freedom. Corresponding p-values were small (less than 0.05), Nursing intervention regarding inter costal drainage care is proved to be significantly effective in reducing the air leaks.

Table 13:- Effect of Nursing Intervention regarding inter costal drainage care on drainage color.

Admin	Abnormal		Normal	
	Freq	%	Freq	%
Day I	58	96.7%	2	3.3%
Day II	47	78.3%	13	21.7%
Day III	26	43.3%	34	56.7%
Day IV	15	25.0%	45	75.0%
Day V	10	16.7%	50	83.3%

On day 1, only 3.3% of the patients had normal drainage colour. On day2, 21.7% of them had normal drainage colour. 56.7%, 75% and 83.33% of the patients had normal drainage colour on day3, day4 and day5. This indicates that there is remarkable improvement in drainage colour of the patients after nursing intervention regarding inter costal drainage care.

Table 14:- Effect of Nursing Intervention regarding Inter costal drainage care on drainage consistency.

Admin	Abnormal		Normal	
	Freq	%	Freq	%
Day I	58	96.7%	2	3.3%
Day II	46	76.7%	14	23.3%
Day III	25	41.7%	35	58.3%
Day IV	14	23.3%	46	76.7%
Day V	8	13.3%	52	86.7%

On day 1, only 3.3% of the patients had normal drainage consistency. On day2, 23.3% of them had normal drainage consistency. 58.3%, 76.7% and 86.7% of them had normal drainage consistency on day3, day4 and day5. This indicates that there is remarkable improvement in drainage consistency after nursing intervention regarding inter costal drainage care.

Table 15:- Effect of Nursing Intervention regarding inter costal drainage care on drainage volume.

Admin	Abnormal		Normal	
	Freq	%	Freq	%
Day I	55	91.7%	5	8.3%
Day II	46	76.7%	14	23.3%
Day III	33	55.0%	27	45.0%
Day IV	20	33.3%	40	66.7%
Day V	17	28.3%	43	71.7%

On day 1, only 8.3% of the patients had normal drainage volume. On day2, 23.3% of them had normal drainage volume. 45%, 66.7% and 71.7% of them had normal drainage volume on day3, day4 and day5. This indicates that there is remarkable improvement in drainage volume after nursing intervention regarding inter costal drainage care.

Table 16:- Effect of Nursing Intervention regarding Inter costal drainage care on drainage oscillation.

Admin	Presence	Freq	%
Day I	present	60	100.0%
Day II	present	60	100.0%
Day III	present	60	100.0%
Day IV	present	60	100.0%
Day V	present	60	100.0%

All of the patients showed drainage oscillation on day 1 through day 5.

Table 17:- Effect of Nursing Intervention regarding Inter costal drainage care on complication.

Admin	Present		Absent	
	Freq	%	Freq	%
Day I	60	100.0%		0.0%
Day II	50	83.3%	10	16.7%
Day III	33	55.0%	27	45.0%
Day IV	23	38.3%	37	61.7%
Day V	17	28.3%	43	71.7%

On day 1, all of the patients had Complication. On day2, 83.3% of them had complication. 55%, 38.3% and 28.3% of them had complication on day3, day4 and day5.

Section III

Table 19:- Effect of Nursing Intervention regarding Inter costal drainage care on pain of patients.

Admin	Mild pain		Moderate pain		Severe pain	
	Freq	%	Freq	%	Freq	%
Day I	0	0.0%	27	45.0%	33	55.0%
Day II	0	0.0%	35	58.3%	25	41.7%
Day III	1	1.7%	48	80.0%	11	18.3%
Day IV	2	3.3%	54	90.0%	4	6.7%
Day V	3	5.0%	56	93.3%	1	1.7%

On day 1, more than half (55%) of the patients had severe pain and 45% of them had moderate pain. On day2, majority of 58.3% of them had moderate pain and 41.7% of them had severe pain. On day3, majority of 80% of them had moderate pain and 1.7% of them had mild pain and 18.3% of them had severe pain. On day4, majority of 90% of them had moderate pain and 6.7% of them had severe pain. On day5, 93.3% of them had moderate pain and

only 1.7% of them had severe pain. This shows that nursing intervention regarding inter costal drainage care was effective in improving (reducing) the pain among patients.

Discussion:-

This chapter discusses the major findings of the study and reviews them in relation to findings from the results of other studies. The aim of this study was to assess the effect of nursing interventions regarding inter costal drainage care. It shows there is significant effect on inter costal drainage care. This indicates that there is an effect of nursing interventions on inter costal drainage care.

Nursing Practice

Improve the practices of inter costal drainage care is an issue about which there has been a growing concern throughout the hospital etc. The primary prevention consists of two major types of activities technological and cognitive. Cognitive activities encompass health education, which is an important nursing responsibility. Nurses working in various settings like hospitals, community health, should make use of the opportunity for providing the correct information regarding practices of Inter costal drainage care. The nurses working in hospital play an important role in education about the inter costal drainage care and early detection of future complications. The nurses can conduct various Inservice education and formulate various health education programmes in various settings in the hospital.

Nursing Education

With changing health care trends nursing education must emphasize primary health care approach focusing on prevention than cure and promotion of health. The education curriculum must include imparting knowledge about the use of various teaching strategies and principles for effective planned health education. Nowadays much importance is given to awareness and promotion of health than the curative aspects. As the needs of society are continuously changing newer components must be incorporated in the nursing curriculum. Nursing education must emphasize on primary prevention and rehabilitative aspects. The basic training of nurses in India includes teaching of certain units related to care of patients with inter costal drainage care. Theoretically the focus should be on the encouragement of the nursing interventions. The nursing teachers can use the result of the research study as an informative illustration for the students. Nursing education should help in inculcating values and a sense of responsibility in the students to educate them to care for inter costal drainage care. However, specialty oriented courses are offered at the master level. Training programmes for nurses, however, need to be improved, to meet the new demands and new trends about the inter costal drainage care practices.

Nursing Administration

In the event of ever-changing disease manifestations, knowledge explosion, technological and ever growing challenges. The administrator has a responsibility to provide nurse with substantial continuing educational opportunities. This will enable the nurses in updating their knowledge, acquiring special skills and demonstrating high quality care by deputing them for in service education programs, special courses, workshops and conferences can be arranged and attended by nursing staff in the Hospital area. Necessary administrative support should be provided for the development of such educational materials. Nursing personnel should be motivated to devote their time for development of educational material such as posters, pamphlets, and planned health teaching programme for nurses to provide a better nursing care. There is a genuine need for continuing education for nurses, particularly for those who are working in hospital. As part of administration, the nurse administrator plays a vital role in educating nurses, and student nurses. The finding of the study should be used as a basis of in-service education programs for nurses so as to make them aware of the present problems

Nursing Research

Nursing research is an essential aspect of nursing as it uplifts the profession and develops new nursing norms and a body of knowledge. Another research has been added to the Nursing literature. Many studies have done on this similar study. The research design, finding and the tool can be used as avenues for further research.

There is a need for extensive and intensive nursing research in this area. The nurse researcher should be able to conduct the research on various aspects of awareness about maintenance of intercostals care, so as to generate more scientific data. Findings of this will provide baseline data about the inter costal drainage care, and strategies that can be adopted to educate people about encourage the exclusive effect of nursing interventions regarding inter costal drainage care and it can be used for further research.

Conclusion:-

The above study was a good learning experience for the investigator. The result of this study showed that the effect of nursing intervention was adequate, yet to meet the standard a protocol was developed and implemented for nurses who are working with patients with intercostal drainage care.

Reference:-

1. P. Fenninger John. Procedures for Primary Care Physicians. Ed 6th. St. Louis: Mosby year book 2004(11);1123-45.
2. Laith Farid Gulli MBBS. MS American Thoracic Society Homepage Website Address-
<http://www.thoracic.org>.(3)
3. Surgery Encyclopaedia. Gale Encyclopaedia of Surgery. 2005 Dec; 67 :167-72.
4. Davies CWH, Gleeson FV, Davies RJO.BTS Guidelines. Management of Pleural Infection. British Medical Journal 2003; 58 :18-20.(13)
5. Ann Trop. Journal of Paediatric. Aligarh-India. 1999 March; 8 :18-21.(12)
6. Wilson, Barnett J. Assessment of Recovery with Special Reference to a Study with Post Operative Cardiac Patients. Spontaneous pneumothorax in children--a review of 95 cases. Journal of Advanced Nursing 2001:435-45.
7. Richard .W .Light. Prevalence and Clinical Course of Pleural Effusions at 30 Days after Coronary Artery and Cardiac Surgery. American Journal of Critical Nursing and Management Articles 2002 Oct; 10(8) :1164.
8. Demirhan R, Ulus TravmaAcilCerrahi. Spontaneous pneumothorax: retrospective analysis of 348 cases. 2009July; 15 (15) :367-70.
9. Celik B, Sahin. Iatrogenic pneumothorax [IPnx]: Etiology, incidence and risk factor. Journal of Thoracic and Cardiovascular Surgery. 2009Aug; 57 :286-90.
10. Kollef. Prevention of Complication among Patients with Tension Pneumothorax. Nursing management of chest drains: a systematic review. Journal of Clinical Medicine. 2006; 76(4):908-40.