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Original Research Article

A study to assess the effectiveness of nebulization followed by chest physiotherapy among patients with respiratory problem, admitted in era hospital at Lucknow

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ABSTRACT

Acute respiratory infections are a major cause of morbidity and mortality in young adults worldwide. T hey account for nearly 3.9 million deaths every year globally. Chest physiotherapy plays an import ant role by promoting drainage and ensuring normal lung expansion in parenchymal lung diseases and pleural diseases. Hence I was keen to evaluate the effectiveness of nebulisation with chest physiotherapy on respiratory status among adults patients with selected respiratory disorders like bronchitis, bronchiolitis, asthma, COPD and pneumonia. It was a quantit ative approach , Quasi experimental study design used (30) with respiratory disorders within the age group of 20-35 above years receiving nebulisation with chest physiotherapy using purposive sampling technique. Respiratory status assessment of clinical parameters (Rating Scale) and Bio physiological measurements(BPM) was done. For experimental group nebulisation with chest physiotherapy for 6 minutes in 10 positions. For control group nebulisation alone given both morning and evening for 2days. Mean, standard deviation, t -test , pearson chisquare test is used for statistical analysis. In experiment al group the respiratory disorder patients are reduced their clinical parameter distress score from 11.33 t o 4.17 . They are able to reduce 7.16 score from base line score. In control group 11.33 t o 7.90 t hey are able to reduce 3.27 score from base line score. Regarding bio physiological parameter, the reduction is statistically significant (P=0.001***) in both groups. Thus the author concludes that Improvement in respiratory status seen in children who receive nebulisation along with chest physiotherapy . Thus patients with respiratory diseases will benefit from the intervention in improving their respiratory status by clearing the secretions.

1. Introduction

A human body consists of different vital organs, which play an important role to maintain the normal physiology of the body. If any dysfunction occurs in any of those organs it alters the function of the other organs also. Lungs are considered to be the one of the very important vital organs as it maintains the oxygen saturation in the body. Lung is a unique organ, inspite of the constant exposure to micro organisms and pollutants. Numerous defence mechanisms including muco-ciliary escalator mechanism plays a significant role to keep the airway sterile. When its function gets compromised, defective drainage of lung secretions results in insult to the organ.

Respiratory disease is a medical term that encompasses pathological conditions affecting the oropharynx and trachea, bronchi, bronchioles, alveoli, pleura and pleural cavity, the nerves and muscles of breathing. Respiratory diseases range from mild and self-limiting, such as common cold, to life-threatening like bacterial pneumonia, pulmonary embolism, and lung cancer. Acute respiratory infections are caused by viruses and bacteria the infection

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in terms of proportion caused by viruses is much greater. The variety of viruses involved are adenoviruses, influenza viruses, para influenza viruses, respiratory syncytial viruses, and rhinoviruses. Acute respiratory infections are more common in young children, with rather specific seasonal occurrences, and some agents are associated with specific respiratory syndromes (Denny FW., 1995). Most of the respiratory diseases cause sputum production, if the person is not able to cough out the sputum it will block the airway which ultimately alters the respiration. [1]

COPD hitherto under diagnosed in India, is now recognized in 4-10% of adult male population**.**On an average, an Indian COPD patient spends about 15% of his income on smoking products and up to 30% on disease management. A report in the Times of India in 2009 states that there are more than 6.77 lakhs death due to chronic obstructive pulmonary diseases and in comparison with other non communicable diseases like cancer(2.92 lakh), heart disease(1.20 lakh), stroke(1.02 lakh) and diabetes(0.21 lakh) the deaths due to respiratory problems is nearly thrice the number. It is reported that the occurrence of COPD is likely to go up from the current rate of 70 lakh to 14 lakh by 2030. This will be more so in India, according to the WHO report of 2008. Concurring with WHO is the National Commission of Macro-Economics and Health which has also estimated that there will be 57.2 million chronic respiratory diseases in India by 2016, of which 45 million people will have COPD or asthma. Globally one billion smoke tobacco but three billion people are victims of indoor pollution, like usage of biomass fuel. Due to lack of awareness COPD is normally associated with smoking. Respiratory diseases are on the rise especially tuberculosis, pneumonia and COPD and the main cause is rise in air pollution, resulting in climate changes which have significantly changed the weather pattern globally, this has also contributed to the rise in respiratory diseases like H1N1 flu. Ironically though chest diseases are the major cause of deaths in India, there are only 2% specialists to treat these chronic disorders and they are not well documented also.

Nebulization is a process of administration of drugs through inhalation in the form of a mist into the lungs to improve the breathing. Nebulization is commonly used for the treatment of cystic fibrosis, asthma, COPD and other respiratory diseases or disorders. Nebulisation improves the breathing pattern of the patient but when it is used with chest physiotherapy and postural drainage it shows the maximum benefit by increasing the secretion of the sputum.

Chest physiotherapy uses airway clearance techniques to help to clear the excess thick sticky mucus from the lungs. It is important to clear these secretions as they increase the problems with infection inflammation and can block the smaller airways, which can result in the lungs not being able to work effectively. The main goal is to improve mucus clearance, to decrease the risk of pulmonary infection, slow the decline in pulmonary function, and improve quality of life. Chest physiotherapy is used in stable patients with obstructive lung disease, to prevent complications in the pre-operative period, and in some critically ill patients, such as those receiving mechanical ventilation. The concept of using Chest physiotherapy to prevent and treat post operative respiratory complications was first described in 1915 by *Mac Mahon* in an article about how to treat post operative trauma patient. In fact, not only recommend the use of CPT. he also recognized the importance of exercising as soon as possible after a surgery to get the lungs back to normal, or their pre-operative status.

Statement: **"**A study to assess the effectiveness of nebulization followed by chest physiotherapy among patients with respiratory problem, admitted in Era Hospital Lucknow"

2. Objective

1. To assess the existing level of oxygen saturation, respiration rate among patient with respiratory problem admitted in Era Hospital Lucknow.
2. To determine the effectiveness of nebulization followed by chest physiotherapy on oxygen saturation, respiration rate among patients with respiratory problem admitted in Era Hospital, Lucknow.
3. To find out the association between pre test oxygen saturation on selected demographic variables among patients with respiratory problem admitted in Era Hospital, Lucknow.

3. Need of The Study

With the modernization increasing number of motor vehicles and increased industrialization, the air pollution is increasing. According to recent statistics Lucknow is one of the polluted cities. Air pollution has the most adverse effect on the respiratory function of the persons. These have increased the respiratory disease in the normal population with frequent nebulization.

Lestari NE, Nurhaeni N, Chodidjash S (2018 Feb 28)[2–5] conducted a study to assess the effectiveness of chest physiotherapy to clear airway obstruction in children younger than five years of age with pneumonia. The aim of this study was to determine the effectiveness of chest physiotherapy and nebulization on children. This study was quasi-experimental with a pre- and post-test non equivalent control group design. Thirty-four respondents selected by consecutive sampling were divided into two groups: one that received nebulization and one that received nebulization with chest physiotherapy. The independent t-test was used to analyze the effect of chest physiotherapy and nebulization on the respiratory status of children younger than age five with pneumonia. There was a significant mean difference in heart

rate, respiratory rate, and oxygen saturation between the control and intervention group. The combination of nebulization and chest physiotherapy is more effective than nebulization only.[6]

3.1. Operational definition

1. *Assess:* Evaluate or estimate the nature, ability, or quality. (Oxford dictionary). In this study, assess refers to the effectiveness of nebulization followed by chest physiotherapy.
2. *Effectiveness-* The degree to which something is successful in producing desired result (Oxford dictionary). In this study, effectiveness refers to the significant improvement in respiratory problem.
3. *Nebulization:* A method of administering drugs by spraying it into the respiratory passages of the patients. The medication may be given with or without oxygen to help carry it into the lungs. (Medical dictionary) In this study, nebulization refers to administration of prescribed through nebulization machine with mask inhalation as ordered by the physician.
4. *Respiratory problem:* A sudden conditions in which breathing is difficult and the oxygen level in the blood abruptly drops lower than normal.In this study, it refers to selective parameter (Oxygen Saturation, Respiratory rate) helps in assessing respiratory conditions.
5. *Chest Physiotherapy:* Chest physiotherapy therapy is the term for the term for a group of treatment designed to improve respiratory efficiency, promote expansion of the lungs, strengthen respiratory muscles, and eliminate secretion from the respiratory system. (Medical dictionary).In this study, chest physiotherapy refers to the application of percussion, deep breathing and coughing to facilitate sputum production.

4. Materials and Methods

4.1. Research methodology

A study was conducted using quantitative research approach at Era Hospital, Lucknow. Pre experimental research design has been adopted. The conceptual framework utilized in this study was WIDENBACH'S helping art of clinical nursing theory. Total sample size was 30. Before conducting the study written consent was obtained from the sample. Purposive sampling technique was used, data collection was done by observation method patients with respiratory problem admitted in Era Hospital.

4.2. Research approach

This present study was Quantitative Approach.

4.3. Research design

Pre experimental one group pre-test-post test- design was chosen for study

Table 1: Schematic representation of research design

Group	Pre-test	Intervention/ treatment	Post-test
Patients admitted in Era hospital with respiratory problems	O1	X	O2

1. **O1-** Assessment of oxygen saturation and respiratory rate.
2. **X-**Administration of nebulization followed by chest physiotherapy.
3. **O2-** Assessment of oxygen saturation and respiratory rate.

Repeat this cycle for 6 days.

5. Variables

5.1. Dependent variable

In this study the dependent variable was patient admitted with respiratory problem admitted in Era Hospital Lucknow.

Independent variable In this study the independent variable were nebulization followed by chest physiotherapy.

1. **Setting of the study -**The study was conducted in Era hospital, Lucknow.
2. **Population-**In this study population was patients, admitted in Era Hospital.
3. **Sample**-In this study the sample were patients admitted in Era Hospital with Respiratory Problems.
4. **Sample size:** The sample size for the study was 30.
5. **Sampling technique -**Purposive Sampling Technique was used to select samples of the present study.

6. Criteria for Sample Selection

6.1. Inclusion criteria

The study includes:-

1. Patients who were admitted in Era Hospital.
2. Patients who were suffering from Respiratory Problem.
3. Patients who were agreed to undergo Nebulization with Chest Physiotherapy.
4. Patients who were prescribed with Duolin, Budecart.

6.2. Exclusion criteria

The study excludes:-

1. The patients with other diseases than respiratory disorder.
2. The patients who were on the ventilator.
3. Patients who are not willing to participate in this study.
4. The patients of other hospitals than Era hospital.

6.3. Development of the tool

The research tool was developed in observed from. To measure oxygen saturation & respiratory status, patients monitoring is observed & values are noted before and after nebulization followed by chest physiotherapy.

6.4. Validity

The reliability of an instrument was done by test and retest method.

6.5. Reliability

The content reliability was checked by ten experts of various fields of Era College of Nursing/ Era University.

6.6. Pilot Study

In this study pilot study was conducted in Career institute of medical science & Hospital, Lucknow and the sample will be 10% (4) of main sample. The pilot study procedure was done for a stipulated period of 1 week in Career Hospital Lucknow the sample were informed by the researcher about the nature and the purpose of the study. The informed consent was obtained from the patients as per rule on the 1st day. On same day (Day 1) the pre assessment of oxygen saturation and respiratory rate was observed, after noting reading nebulization and chest physiotherapy was performed, as a post assessment reading for oxygen saturation and respiration rate was noted again. The same procedure continued in morning and evening till six days.

6.7. Data collection procedure

The data collection procedure was done for a stipulated period of 30 days in Era hospital, Lucknow. Permission to conduct the study was obtained from the Nursing superintendent and Medical superintendent. The samples were informed by the researcher about the nature and purpose of the study. The informed written consent was obtained as per rule on the 1st day. On the same day (Day 1) the pre assessment of oxygen saturation and respiration rate was obtained then nebulization and chest physiotherapy was done then post assessment of the same parameters was done. Then till six day same procedure was continued.

7. Scoring Technique

7.1. Score for oxygen saturation

- 0 - (Normal SaO2)
- 1 - (Low SaO2)
- 2 - (Very low SaO2)

7.2. Score for respiration

- 0 - (Normal)
- 1 - (Tachyponea)
- 2 - (Bradypnea)

7.3. Physiological Parameters

7.3.1. Oxygen saturation (SaO2)

- 95 – 100 % - 0 (Normal SaO2)
- 94 – 85 % - 1 (Low SaO2)
- Less than 85 % - 2 (Very low SaO2)

7.4. Respiratory rate

- 12-20 breaths / minute - 0 (Normal)
- Above 20 breaths /minute - 1 (Tachypnea)
- Below 12 breaths /minute - 2 (Bradypnea)

7.5. Plan for data analysis

1. The demographic variables will be analysed by using descriptive measures (frequency and percentage).
2. Frequency and percentage for data analysis of demographic data.

7.6. Protection of human right

The study was conducted after the approval of ethical committee in Era University / Era college of nursing and research committee of the Era College of Nursing. The nature and purpose of the study was explained to the care personnel involved. The informed written consent was obtained from the study participant.[7] The anonymity of the sample was maintained throughout the study.

7.7. Observation of the study

Review of literature was done from primary and sources that formed the basis of selection of problem, formation of the tool conceptual framework and preparation of the protocol.

The conceptual framework was based on modified Widenbach's helping art theory. It was appropriate model prescribed comprehensive framework to achieve the objective of the study.

The helping art of clinical nursing theory that was developed in 1964 by Widenbach's

The nursing theory is based upon the philosophy is their attitude and belief about life now that effected reality for them.

Wiedenbach believed that there were 3 essential components associated with a nursing philosophy:

1. Recover for life
2. Respect for the dignity, worth, autonomy and individual of each human being and
3. Resolution to act on personally and professionally held belief.

The research design used in this study was pre experimental research design. The tools consisted of demographic data, respiratory status assessment includes clinical assessment - chest retract ion, nasal flaring, air entry, breath sounds, capillary refill test, cough, sputum nature and us e of accessory muscle. Bio Physiological Measurement includes, respiratory rate and oxy gen saturation. Experts validated the tool.[8]

The pilot study was conducted after getting formal administrative permission and ethical clearance. The pilot study was conducted in the selected ward at Career Institute of Medical Sciences $ Hospital Lucknow, for the period of one week from 08/06/2019 to 14/06/2019. Formal permission was obtained from the Chief Medical Superintendent (CMS) Career Institute of Medical Sciences $ Hospital Lucknow four samples that fulfilled the inclusion criteria technique. Informed written consent was obtained from the al the patients. The tools was found reliable to proceed for the main study. The reliability was established by using test re-test method. The study was found to feasible. The other opinion and suggestion that were incorporated in the main study was to accomplish the objective of the study.

The main study was conducted on 30 patients with selected reparatory disorder at Era Hospital, Lucknow. The main study was conducted from 10/07/2019 to 10/08/2019, for 4 weeks.[9,10] The samples were selected on the basis of purposive sampling technique.

The data collected was analyzed and interested based on their objective using descriptive and inferential statistics.

8. Result of the study

8.1. Major findings

Section -1: Major finding regarding the demographic variable.

Major finding of the subject were of 83.33% belong to the age group above 35 year. 60% of subject were male while 40% of the patients admitted in unite were female. It has been observed that 46.66% of the subject were illiterate, 26.66% were primary educated. 66.66% were from medical ward. 36.66% of the subject were 0-6 month duration of suffering/ illness, 23.33% of the subject were from 13- 18 month duration of suffering. 33.33% of the subject were from the other work, 33.33% of the subject were from bussness.43.33% of the subject were from smoking, 23.33% were from tobacco chewing.

Section- 1: Findings on demographic characteristics of the subject.

1. Out of thirty (30) participants according to age, 1 (3.33%) were from 21-25 year age group, 1 (3.33%) were from 26-30 year age group, 3 (10%) were from 31-35 year age group, 25 (83.33%) were from above 35 year age group.
2. According to Gender among 30 patients, 18 (60%) were from Male patients, 12 (40%) were Female Patients**.**
3. According to Educational Qualification among 30 patients 14 (46.66%) were from Illiterate, 8 (26.66%) were from primary, 3 (10%) where from high school, 3 (10%) were from intermediate, 1 (3.33%) were from graduate, 1(3.33) were from post graduate.
4. According to Ward of admission among 30 patients 4 (13.33%) were from Medical ward, 20 (66.66%) were from Tb ward, 6 (20%) were from Medical ward, 0 (0%) were from HDU ward.
5. According to Duration of suffering / Illness among 30 patients 11 (36.66%) were from 0-6 months, 3 (10%) were from 7-12 months, 7 (23.33%) were from 13-18 months, 3(10%) were from19-24 months, 6 (20%) were from more than 25 months.
6. According Area of occupation among 30 patients 2 (6.66%) were from field work, 0 (0%) were from industrial worker, 10 (33.33%) were from business worker, 8 (22.66%) were from house wife 10 (33.33%) were from other work,
7. According Exposure of bad habits among 30 patients 0 (0%) were from drugs abuse, 7 (23.33%) were from tobacco chewing, 1 (3.33%) were from alcohol use, 13 (43.33) where from smoking, 9 (30%) were from passive smoking.

- *Section- 2:* (a) Major Finding related to exiting level of oxygen saturation among patient with respiratory problem.
- *Objective-2:* To assess the existing level of oxygen saturation among patient with respiratory problem admitted in Era Hospital Lucknow.
- *Section- 2: (a)* Finding related to exiting level of oxygen saturation among patient with respiratory problem admitted in Era Hospital Lucknow.

- *Objective-2:* To assess the existing level of respiration rate among patient with respiratory problem admitted in Era Hospital Lucknow.
- *Section 2:* (b) Finding related to exiting level of respiration rate among patient with respiratory problem admitted in Era Hospital Lucknow.

Table 2: Data on demographic characteristic of sample

S.NO.	Demograpic data		Frequency	Percentage
1	Age in year	21-25	1	3.33
		26-30	1	3.33
		31-35	3	10
		Above 35	25	83.33
		Total	30	100
2	Gender	Male	18	60
		Female	12	40
		Total	30	100
3	Educational Status	Illiterate	14	46.66
		Primary	8	26.66
		High school	3	10
		Intermediate	3	10
		Graduate	1	3.33
		Post Graduate	1	3.33
		Total	30	100
4	Ward of admission	Medical Ward	4	13.33
		TBC Ward	20	66.66
		Medical Ward	6	20
		HDU	0	0
		Total	30	100
5	Duration of suffering / Illness	0-6 Months	11	36.66
		7-12 Month	3	10
		13-18 Month	7	23.33
		19-24 Month	3	10
		More than 25 Month	6	20
		Total	30	100
6	Area of occupation	Field work	2	6.66
		Industrial Worker	0	0
		Business	10	33.33
		House wife	8	22.66
		Other Work	10	33.33
		Total	30	100
7	Exposure of bad habits	Drugs Abuse	0	0
		Tobacco Chewing	7	23.33
		Alcohol Use	1	3.33
		Smoking	13	43.33
		Passive Smoking	9	30
		Total	30	100

Table 2 *Revealed*

Table 3: Frequency and percentage distribution of existing level of oxygen saturation**.**

Oxygen saturation	Frequency	Percentage
Normal	6	20
Low	22	73.33
Very low	2	6.66

Table 3 Revealed**:** Among 30 patients 6 (20%) patient were having normal oxygen saturation and 22(73.33%) patients were having low oxygen saturation and 2 (6.66%) were having very low oxygen saturation.

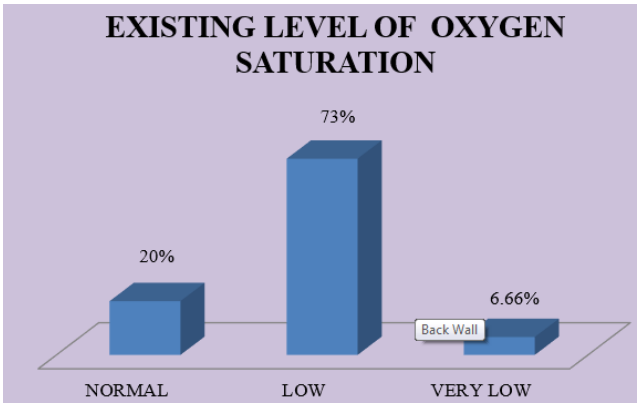

Fig. 1: Bar graph showing percentage of the subject in the respect of existing level of oxygen saturation.

Table 4: requency and percentage distribution of existing level of respiration rate.

Respiration rate	Frequency	Percentage
Normal	14	40%
Tachyponea	16	60%
Bradyponea	0	0%

Table 4 Revealed: among 30 patients 14 (40%) patients where having normal respiration rate and 16 (60%) patients were having Tachyponea and 0 (%) were having bradyponea

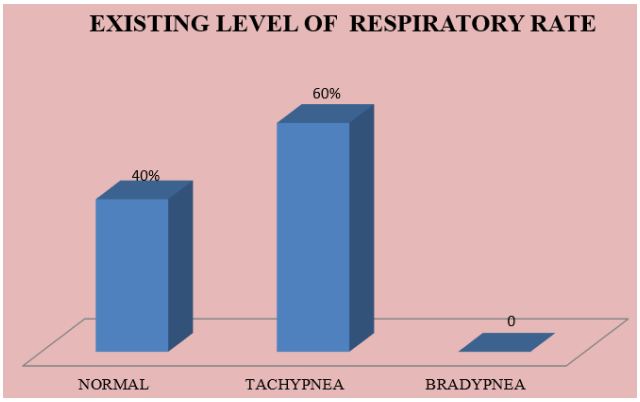

Fig. 2: Bar diagram showing percentage distribution of the subject in the respect of exiting level of respiration rate.

- *Section-3:* Finding related to effectiveness of nebulization followed by chest physiotherapy on oxygen saturation among patient with respiratory problem admitted in Era Hospital, Lucknow.

(a) Frequency and percentage computation to describe effectiveness of nebulization followed by chest physiotherapy on oxygen saturation among patient with respiratory problem admitted in Era Hospital, Lucknow.

Table 5: Frequency and percentage distribution of post test of oxygen saturation

O2 saturation	Frequency	Percentage
Normal	20	66.66
Low	10	33.33
Very	0	0

Table 5 Revealed: among 30 patients 20 (66.66 %) were having normal oxygen saturation and 10 (33.33) patients were having low oxygen saturation.

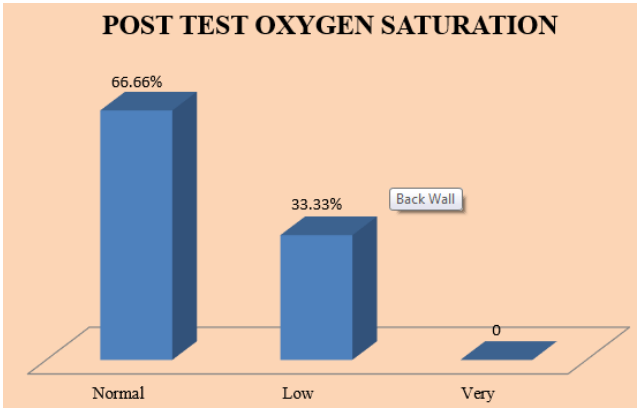

Fig. 3: Bar diagram showing percentage distribution of the subject in the respect of post test oxygen saturation.

Major finding of the subject among 30 patients 6 (20%) patient were having normal oxygen saturation and 22(73.33%) patients were having low oxygen saturation and 2 (6.66%) were having very low oxygen saturation.

- *Section 2:* (b) Major Finding related to exiting level of respiration rate among patient with respiratory problem admitted in Era Hospital Lucknow.

Major finding of the subject among 30 patients 14 (40%) patients where having normal respiration rate and 16 (60%) patients were having Tachyponea and 0 (%) were having bradyponea.

- *Section-3:* (a) Major Finding related to determine the effectiveness of nebulization followed by chest physiotherapy on oxygen saturation among patient with respiratory problem.

1. **Pre test value:** Among 30 patients 6 (20%) patient were having normal oxygen saturation and 22(73.33%) patients were having low oxygen saturation and 2 (6.66%) were having very low oxygen saturation.
2. **Post test value:** Among 30 patients 24 (80%) patient were having normal oxygen saturation and 3(10%) patients were having low oxygen saturation and 3 (10%) were having very low oxygen saturation.

- *Section-3:* Finding related to effectiveness of nebulization followed by chest physiotherapy on respiration rate among patient with respiratory problem admitted in Era Hospital, Lucknow.

(b) Frequency and percentage computation to describe effectiveness of nebulization followed by chest physiotherapy on respiratory rate among patient with respiratory problem admitted in Era Hospital, Lucknow.

Table 6: Frequency and percentage distribution of post test of respiration rate

Respiration	Frequency	Percentage
Normal	28	93.33
Tachyponea	2	6.67
Bradyponea	0	0

Table 6 Revealed: Among 30 patients 28 (93.33%) patients were having normal oxygen saturation and 2 (6.66%) were having Tachyponea and 0(0%) were having bradyponea

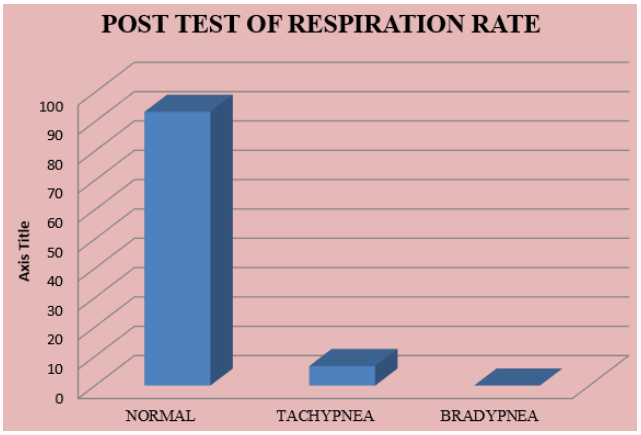

Fig. 4: Bar diagram showing percentage distribution of the subject in the respect respiration rate.

Comparison of mean value of pre test and post test of oxygen saturation

A Comparison of pre-test and post-test level of oxygen saturation among the patient with respiratory problem admitted in Era Hospital, Lucknow.

- Section-3(a): Frequency and percentage computation to describe effectiveness of nebulization followed by chest physiotherapy on oxygen saturation pre test and

Table 7: Mean and standard deviation of oxygen saturation**.** Paired samples statistic

Oxygen saturation		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Post test O2 saturations day 6	97.47	30	1.889	.345
	Pre test of O2 saturations day 1	90.67	30	3.651	.667

Table 7 Revealed: among 30 samples of O2 saturation pre test score, mean (90.67) and SD (3.651) and post test O2 saturation mean 97.47 and SD (1.889)

Table 8: Correlation of pre-test and post-test oxygen saturation score paired samples correlations Paired Samples Correlations

O2 saturation		N	Correlation	Sig.
Pair 1	Post test O2saturation & Pre test of O2 saturation	30	.563	.001

Table 8 Revealed:Among 30 samples, correlation is .563

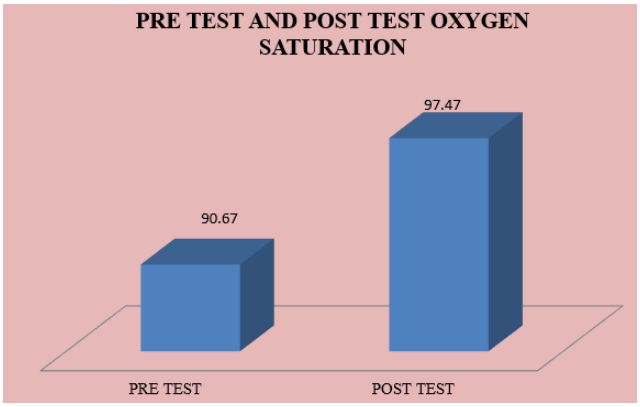

Fig. 5: Bar diagram showing comparison of mean oxygen saturation score of pre test and post test**.**

post among patient with respiratory problem admitted in Era Hospital, Lucknow.

8.2. Comparison of pre and post intervention respiration rate

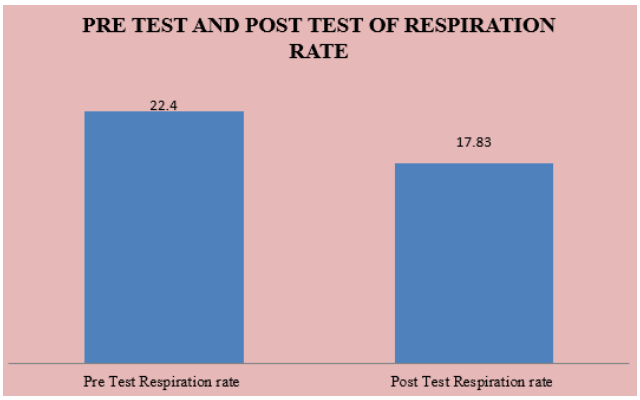

Fig. 6: Bar diagram showing comparison of mean respiration rate of pre test and post test.

Comparison of pre-test and post-test level of respiratory rate among the patient with respiratory problem admitted in Era Hospital, Lucknow.

- *Section-3:* (a) Major Finding related to determine the effectiveness of nebulization followed by chest physiotherapy on oxygen saturation among patient with respiratory problem.

1. **Pre test value:** Among 30 patients 14 (40%) patients where having normal respiration rate and 16 (60%) patients were having Tachyponea and 0 (%) were having bradyponea.
2. **Post test value**: Among 30 patients 28 (93.33%) patients were having normal oxygen saturation and 2 (6.66%) were having Tachyponea and 0(0%) were having bradyponea.

- *Section-4* (a): Major Finding related to effectiveness of nebulization followed by chest physiotherapy on respiratory rate and oxygen saturation among patient with respiratory problem admitted in Era Hospital, Lucknow.
- Major finding of the paired t-test value is applied to find the significant deference between two means, pre test and post test value of oxygen saturation and so according to calculated value paired t test value is 12.326 and it is highly significant at table value 2.05 at df =29.
- *Section-4* (b): Major Frequency and percentage computation to describe effectiveness of nebulization followed by chest physiotherapy on respiratory rate among patient with respiratory problem admitted in Era Hospital, Lucknow.
- Major finding of 30 samples in mean 4.567, standard deviation 3.421, standard error mean 0.625, Lower 3.421, upper 5.844, t value 7.312. Df 29 According to the table calculated t value 7.312 for respiration rate is significant.
- *Section-5* (a): Major finding the association between pre test oxygen saturation and demographic variables

Table 9: Paired sample t test of oxygen saturation paired sanples test

Pre test and post test values of Oxygen saturation	Paired Differences					Paired T- test	Df
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference			
				Lower	Upper		
	6.800	3.022	.552	7.928	5.672	12.326	29

Table 9 Revealed: The test results shows that t value is 12.326, (df=29) which is (12.326) calculated value greater than tabulated value at (2.05) therefore we can reject the null hypothesis and accept the hypothesis at level of significance, which means the oxygen saturation of the patients is improved after nebulization followed by chest physiotherapy.

Table 10: Mean and standard deviation of respiration rate pairedsamples statistics

Respiration rate		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Pre test of respiration rate day 1	22.40	30	3.953	.722
	Post test of respiration day 6	17.83	30	2.276	.415

Table 10 Revealed: Among 30 patients pre test respiration score mean (22.40) and SD (3.953) and post test of respiration score means (17.83) and SD (2.276).

Table 11: Correlation of pre test and post test of respiration rate paired samples correlations

Respiration rate		N	Correlation	Sig.
Pair 1	Pre test of respiration rate day 1 & Post test of respiration day 6	30	.506	.004

Table 11 Revealed: Among 30 sample, correlation is 506

among patients with respiratory problem admitted in Era Hospital, Lucknow.

1. **Pre test value:** Among 30 patients 6 (20%) patient were having normal oxygen saturation and 22(73.33%) patients were having low oxygen saturation and 2 (6.66%) were having very low oxygen saturation.
2. **Post test value:** Among 30 patients 24 (80%) patient were having normal oxygen saturation and 3(10%) patients were having low oxygen saturation and 3 (10%) were having very low oxygen saturation.

- *Objective 1-* (a) To assess the existing level of oxygen saturation among patient with respiratory problem admitted in Era Hospital Lucknow.

a) Discussion on the finding regarding the oxygen saturation among patient with respiratory problem admitted in Era Hospital Lucknow.

The present study illustrate the 6 (20%) patient were having normal oxygen saturation and 22(73.33%) patients were having low oxygen saturation and 2 (6.66%) were having very low oxygen saturation.

The above finding were support by a study conducted by Valenza-Demet G, Valenza MC, et al (2014 Nov) conducted the study to assess the effects of a physiotherapy protocol on patients with pleural effusion. The study is randomized controlled trial. A total of 104 consecutive in patients with a medical diagnosis of pleural effusion. A comparative analysis showed a significant improvement of spirometric parameters in the intervention group; pre-to-post hospitalization predicted values showed significant changes in vital capacity (73.1 ± 12.6% to 72.13 ± 13.7 %, P<0.001), forced expiratory volume in first second (72.13 ± 13.7% to 78.98 ± 16.9%, P<0.001) and forced expiratory flow at 25-75 % (64.8 ± 35.1% to 76.78 ± 35.3%, P=0.198) compared to the control group that showed no significant changes after treatment.

- *Objective 1-* (b) To assess the existing level of respiration rate among patient with respiratory problem admitted in Era Hospital Lucknow.

(b) Discussion on the finding regarding the respiration rate among patient with respiratory problem admitted in Era Hospital Lucknow.

The present study illustrate the 28 (93.33%) patients were having normal oxygen saturation and 2 (6.66%) were having Tachyponea and 0(0%) were having bradyponea.

The above finding were support by a study conducted by Y. Nuhoglu, Atas, et al., (2005) Conducted studied the acute effects of additional bronchodilator response to systemic steroids plus nebulised salbutamol in the early management of children with acute asthma. Asthmatic patients aged between 5-15 years in a double-blind, placebo-controlled were investigated; they received three consecutive doses of nebulised salbutamol and one dose of parenteral methyl prednisolone. Pulmonary index scoring and peak flow meter was performed in both groups before and after the treatment. The results showed that there was a statistically significant difference between the two groups with respect to the increase in PEFR (p=0.0155). The author concludes

that the effect of nebulised budesonide in addition to systemic steroids and nebulised salbutamol in improving the spirometric indices in asthmatic children.

- *Section-2:* Finding related to effectiveness of nebulization followed by chest physiotherapy on pre test and post test oxygen saturation among patient with respiratory problem admitted in Era Hospital, Lucknow.

(a) Discussion on the finding regarding effectiveness of nebulization followed by chest physiotherapy on pre test and post test oxygen saturation among patient with respiratory problem admitted in Era Hospital, Lucknow.

1. The present study illustrate 6 (20%) patient were having normal oxygen saturation and 22(73.33%) patients were having low oxygen saturation and 2 (6.66%) were having very low oxygen saturation.
2. The present study illustrate 28 (93.33%) patients were having normal oxygen saturation and 2 (6.66%) were having Tachyponea and 0(0%) were having bradyponea.

(b) Discussion on the finding regarding effectiveness of nebulization followed by chest physiotherapy on pre test respiration rate among patient with respiratory problem admitted in Era Hospital, Lucknow.

1. The present study illustrate 28 (93.33%) patients were having normal oxygen saturation and 2 (6.66%) were having Tachyponea and 0(0%) were having bradyponea.
2. The present study illustrate 28 (93.33%) patients were having normal oxygen saturation and 2 (6.66%) were having Tachyponea and 0(0%) were having bradyponea.

- *Objective 3:* Finding related to effectiveness of nebulization followed by chest physiotherapy on respiratory rate and oxygen saturation among patient with respiratory problem admitted in Era Hospital, Lucknow.

a) Discussion on the finding regarding the effectiveness of nebulization followed by chest physiotherapy on oxygen saturation among patient with respiratory problem admitted in Era Hospital, Lucknow.

b) Discussion on the finding regarding the effectiveness of nebulization followed by chest physiotherapy on respiration rate among patient with respiratory problem admitted in Era Hospital, Lucknow

The present study illustrate Paired t-test value is applied to find the significant deference between two means, pre test and post test value of oxygen saturation and so according to calculated value paired t test value is 12.326 and it is highly significant at table value 2.05 at df =29.

Here the present study was supported by a study conducted by Karen sudeep, Sunalene G. Devadason et al (2009) conducted the Studied the aerosol delivery of nebulised budesonide in young children with asthma. The subjects taken for the study were ten asthmatic children (5males), mean age 20.3 months (range 6–41 months) inhaled radio labelled budesonide (MMD 2.6 μm) through a modified vibrating membrane nebulizer The author concludes that by using an improved age-adjusted complementary combination of delivery device and drug formulation to deliver small particles, lung deposition and ratio of lung deposition to oro pharyngeal deposit ion in young asthmatic children is highly improved.

- *Objective 3:* To determine the effectiveness of nebulization followed by chest physiotherapy on respiratory rate among patient with respiratory problem admitted in Era Hospital, Lucknow.

The present study illustrate in mean 4.567, standard deviation 3.421, standard error mean 0.625, Lower 3.421, upper 5.844, t value 7.312. Df 29 According to the table calculated t value 7.312 for respiration rate is significant.

Shibi Chakra Varthy K., et al (2002) Conducted a study to estimate the prevalence of asthma in children less than 12 years of age and the prevalence of asthma in children residing in urban and rural areas of Tamil Nadu. A total of 584 children from Chennai were selected. Overall prevalence of breathing difficulty was 18% and the prevalence of asthma diagnosed was 5%. Twenty two percent of urban and 9% of rural children reported breathing difficulty. Urban children reported recent wheeze more often than rural children. The author concludes that the prevalence of asthma and other 'wheezy' illnesses may be higher in urban areas of Chennai.

- *Objective 4* (A): To find out the association between pre test oxygen saturation and demographic variables among patients with respiratory problem admitted in Era Hospital, Lucknow.

1. **Pre test value:** Among 30 patients 6 (20%) patient were having normal oxygen saturation and 22(73.33%) patients were having low oxygen saturation and 2 (6.66%) were having very low oxygen saturation.
2. **Post test value:** Among 30 patients 24 (80%) patient were having normal oxygen saturation and 3(10%) patients were having low oxygen saturation and 3 (10%) were having very low oxygen saturation.

1. **Age:** Among 30 samples in age of 21-25 one patients was in category of low oxygen saturation, in age group of 26-30 1 patient was in low oxygen saturation, in age group of 31 – 35 2 patients were having low oxygen saturation and one patient is having very low oxygen saturation and in the age above 36, 6 patients

were having normal oxygen saturation, 18 patients were having low oxygen saturation and 1 patient was having very low oxygen saturation. Non- parametric testing to find out the association between pre-test oxygen saturation and gender variable among patients with respiratory problem admitted in Era Hospital, Lucknow.

2. **eveled:**Among 30 samples, 3 male patients were in normal respiratory rate, 15 male patients were in low respiratory rate, 1 male patient was having very low respiratory rate, amongst female 3 were in normal respiratory rate, 7 were in low respiratory rate, 1 was having very low respiratory rate
3. **Gender:** Among 30 samples, 3 male patients were in normal respiratory rate, 15 male patients were in low respiratory rate, 1 male patient was having very low respiratory rate, amongst female 3 were in normal respiratory rate, 7 were in low respiratory rate, 1 was having very low respiratory rate.

8.3. Education status

1. Among 30 patients 5 illiterate patients were having normal oxygen saturation, 9 were having low oxygen saturation.
2. Among 30 patients 8 patients were having primary education, among these 8, 1 patient was having normal oxygen saturation, 6 were having low oxygen saturation and 1 was having very low oxygen saturation,
3. Among 30 patients 3 patients were with high school qualification and they all were having low oxygen saturation,
4. Among 30 patients 3 patients were having senior secondary qualification and they all were having low oxygen saturation.
5. 1 graduate patient was having low oxygen saturation.
6. Among 30 samples 1was post graduate and was having very low oxygen saturation.

8.4. Exposure of bad habits

1. In terms of exposure of bad habits 8 patients were having habit of tobacco chewing among them 1 was having normal oxygen saturation, 6 were having low oxygen saturation and 1 was having very low oxygen saturation.
2. Among 30 patients 1 patient was having habit of alcoholism and was having low oxygen saturation.
3. 11 patients were smokers among them 3 were having normal oxygen saturation and 8 were having low oxygen saturation.
4. Among 30 patients 10 patients were affected through passive smoking, 2 of them having normal oxygen saturation were having low oxygen saturation and 1 was having very low oxygen saturation.

9. Conclusion

The study revealed that nebulization followed by chest physiotherapy was very effective.

An improvement in the reparatory status and thereby decreasing the further complication of the any respiratory disease. And also increased oxygen saturation level.

9.1. Implication of the study

The investigator had drown the following implication for the study, which were vital concern in the field of nursing practice, nursing education, nursing administration and nursing research.

9.2. Implication for nursing practice

1. Respiratory disease are common among adult it is curable if diagnosed early and treated properly. As a member of the health team, nurses play an important role in improving status among patient with reparatory problem.
2. Basic nursing practice is important to develop knowledge and skills in performing effective chest physiotherapy.
3. Nurses should create awareness among patient and their parents through health education about home remedies and simple intervention for reparatory illness.

9.3. Implication for nursing education

1. The study has clear proved that nebulization followed by chest physiotherapy was very effective any age of patients with reparatory disorders.
2. Nursing student must be posted in pulmonary ward for demonstration of nebulization followed by chest physiotherapy technique on adult with reparatory disorder.
3. Arrange for an in service education program and staff development program on demonstration of the nebulization followed by chest physiotherapy technique for the staff nurses and nursing student.

9.4. Implication for nursing education

1. Research is a never ending process of acquiring knowledge that my enhance a result on its completion. Nurses need to attend more conferences to acquire knowledge.
2. Nursing researcher can encourage clinical nurses to apply the research finding in their daily nursing care activities and can bring about new technique in relieving secretions effectively for adult with respiratory disease

3. This study also brings about the fact that more studies need to be conducted by comparing the nebulization with other procedure for clearing secretion like breathing exercise, flutter therapy etc.

9.5. Implication for nursing administration

1. The administrator should give permission to do the various experimental study to find out the efficiency of the procedure.
2. The nurse administrator should prepare the standard protocol for nebulization followed by chest physiotherapy technique.
3. Pamphlets, video and live demonstration regarding postural drainage and percussion technique should be exhibited to the parents of the patients with chronic respiratory disease like cystic fibrosis.

9.6. Recomendation

The investigator recommends the nurses and administrator to provide pamphlets and demonstrate the nebulization and chest physiotherapy technique on adults with respiratory disease in pulmonary ward, general ward, and TBC ward.

The study recommended the following suggestion for further research.

1. Similar study can be done by other technique of clearing secretions like breathing exercises with large sample
2. Similar study can be conducted in pulmonary ward unit as a true experimental study.
3. A descriptive study can be conducted to identify the factors that influence the respiratory status after nebulization followed by chest physiotherapy.
4. Similar study can be conducted for school age children with respiratory disease.

9.7. Limitation

Initially the patients were not cooperative for nebulization followed by chest physiotherapy techniques.

The study revealed that nebulization followed by chest physiotherapy was very effective, an improvement in the reparatory status and thereby decreasing the further complication of the any respiratory disease, and also increased oxygen saturation level.

10. Source of Funding

None.

11. Conflict of Interest

None.

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