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Effect Of Halotherapy On Airway Clearance Among Patient With Respiratory Problem In IMS & Sum Hospital, Bhubaneswar, Odisha

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ABSTRACT

Halotherapy, also known as dry salt therapy, involves inhaling a negative ion-rich salt microclimate. Hypertonic saline solutions are used to help clear mucus in inflammatory respiratory conditions by dehydrating the periciliary layer. Objectives of the study are: To evaluate the level of airway clearance among patients with Respiratory problem in experimental and control group before administering halotherapy, To assess the effect of halotherapy on level of airway clearance in experimental group, To find out the association of airway clearance with selected demographic variables. A quasi-experimental study at IMS & SUM Hospital in Bhubaneswar, Odisha, involved 60 respiratory patients to assess the effect of halotherapy on airway clearance. The study used total enumerative sampling to form experimental (n=30) and control (n=30) groups. Data on socio demographics was collected using a self-structured schedule, and airway clearance was evaluated with the Airway Clearance Assessment Scale. Study resulted significant difference between the pre-test score and post test score after giving intervention (i.e. 3% hypertonic saline Nebulization) as evidenced by t test value at p=0.000 which is extremely significant. Considering the experimental group patients were reduced 6.4 symptoms score with t value =13.9,p value =0.000 which is highly significant but in control group reduction score was 2.2 with t value=6.5,p value =0.06 which is not statistically significant. The chi square analysis showed statistically significant association between airway clearance after giving Halo therapy. Halotherapy was effective in improving airway clearance in patients with respiratory issues. Future studies with larger samples and varied interventions could provide further insights.

KEY WORDS: Halotherapy, Airway Clearance, Respiratory problem

INTRODUCTION

A disease is something, an abnormal condition that negatively affects the human body structure or the function of all or a portion/part of an organism, and that does not due to any immediate outermost injury. It is so often known to be as medical conditions which are correlated with signs and symptoms which are very common in these days. In this modern world, where we have almost everything, we have now the modern technology associated with medical science which is helping to understand the disease so closely and giving the near most information to find-out the best treatment. It's a great progress and achievement also by the medical industry where a particular disease can be recovered by proper medication and treatment and it's only being possible because of medicine industry. So many types of disease are now been introduced to this world, and from this respiratory problem is a big challenge for us the cure and some betterment solutions is needed which can be help the world[1]. Over many years the inflammation leads to permanent changes in lungs. Damage to the air sacs in the lungs causes emphysema and lungs lose their elasticity. So Our airway can become narrowed or blocked due to many causes , like -allergic reaction, Inhaling any foreign objects, Viral and bacterial infections and any trauma. For which faced some difficultly to breathing, cough. So, to overcome that issues there are so many treatment Exercises and therapies are available. The therapies are like chest physiotherapy, Halotherapy, coughing huffing technique .Including this all I chosen Halotherapy to improve the airway clearance because I searched about it and find out a positive responses. It stimulates a natural salt cave micro climate. The treatment in the natural salt caves(Speleotherapy) has been known since ancient time[2].

Indications for use: Rhinitis, Chronic Bronchitis, Pneumonia, COPD, Cold, Chronic Wheezing. Most individuals in respiratory distress experience shortness of breath. In cases of heart failure, shortness of breath progressively worsens as the patient reclines (orthopnoea) and increases with exertion. Shortness of breath during episodes of hyperventilation is related to anxiety and a feeling of suffocation; it is not related to exertion. In addition, hyperventilation is not associated with cough. Asthmatic patients exhibit shortness of breath associated with episodic wheezing during acute periods. Some asthmatic patients are asymptomatic between acute episodes[3]. The respiratory tract is the site of an exceptionally large range of disorders for three main reasons: (1) it is exposed to the environment and therefore may be affected by inhaled organisms, dusts, or gases; (2) it possesses a large network of capillaries through which the entire output of the heart has to pass, which means that diseases that affect the small blood vessels are likely to affect the lung; and (3) it may be the site of "sensitivity" or allergic phenomena that may profoundly affect function[4].

METHODS

A quasi experimental research study with non-randomized control group design was conducted among 60 respiratory problem patients to evaluate the effect of halotherapy on airway clearance at IMS &SUM Hospital, Bhubaneswar, Odisha. By using total enumerative sampling technique Sample who met the inclusion criteria were characterized into experimental group (n=30) and control group (n=30). The tool like Self structured socio demographic schedule was used to collect socio demographic data and standardized tool i.e.

Airway Clearance Assessment Scale was used to assess the airway clearance. To ensure ethical compliance, the study obtained approval from the research committee and institutional ethics

committee, as well as written permission from the medical superintendent and administrative review board. Informed consent was obtained from all participants, protecting their rights and privacy.

STATISTICAL ANALYSIS

Descriptive and inferential statistical were used to analyze the data. The demographic variables was analyzed by using frequency and percentage. Symptoms score was calculated by mean and standard deviation and difference between experimental and control was analyzed by using inferential statistics like paired &unpaired t-test.

RESULTS

Section- I

Frequency and percentage distribution of airway clearance with pre test and post test score of control group.

Fig 1 shows that 3.3 percentage of sample had adequate level,33.6 percentage of sample had moderately adequate level and 60 percentage of sample had inadequate level in control group pretest score and 10 percentage of sample had adequate level, 60 percentage had moderately adequate level and 30 percentage had inadequate level of airway clearance in post score of control group. **N = 30**

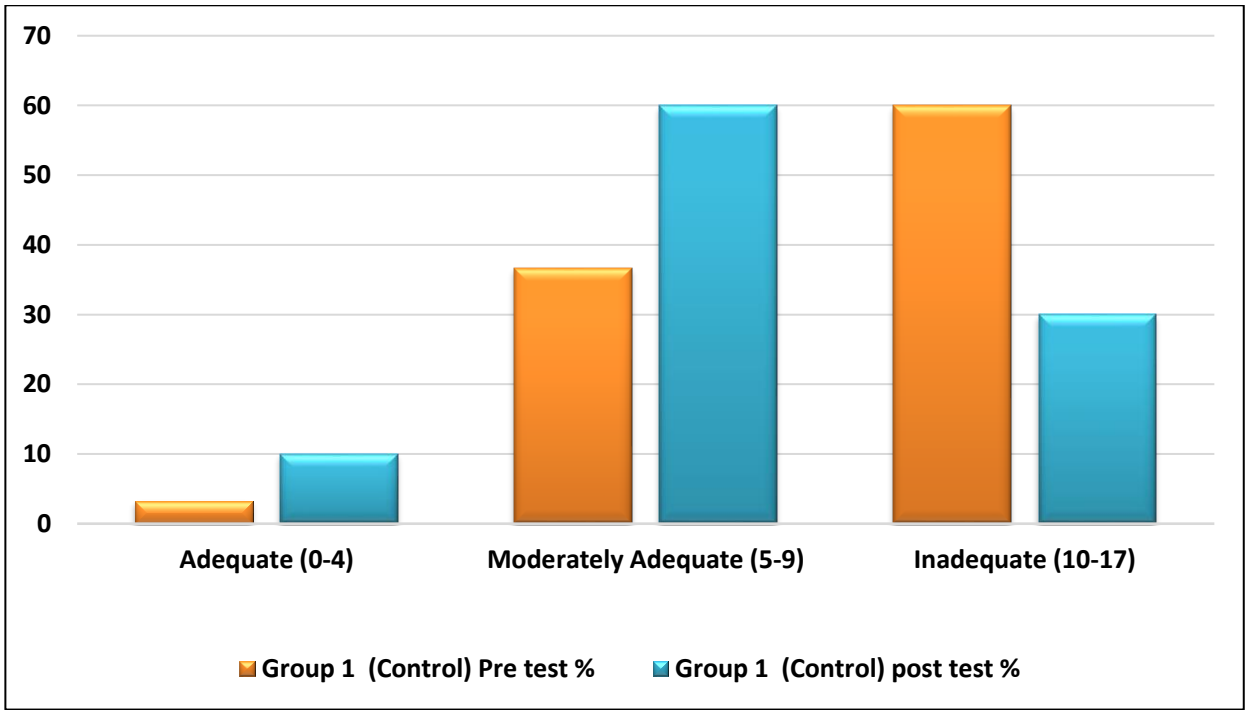

Fig 1:Column diagram showng percentage (%) of study samples according to the level of airway clearance among patient with respiratory problem in control group pre test and post test score.

SECTION -II

Frequency and percentage distribution of airway clearance with pre test and post test score of Experimental group.

Fig 2 shows that 10 percentage of sample had adequate level,20 percentage of sample had moderately adequate level and 70 percentage of sample had inadequate level in experimental group pre test score and 40 percentage of sample had adequate level, 43 percentage had moderately adequate level and 16 percentage had inadequate level of airway clearance in post score of experimental group. **N =30**

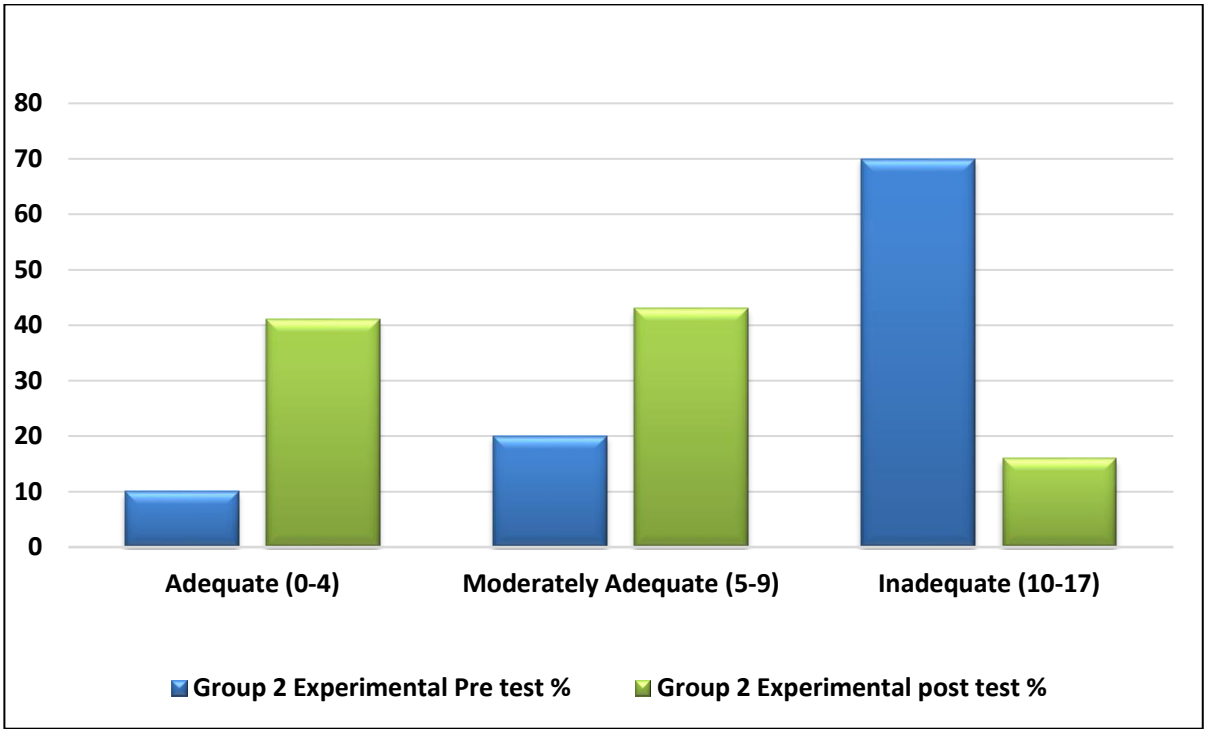

Fig 2:Column diagram showing percentage (%) of study samples according to the level of airway clearance among patient with respiratory problem in experimental group pre test and post test score.

SECTION -III

Effect of Halotherapy on airway clearance among patients with respiratory distress in between pre test and post test scores of experimental group by using paired 't' test.

To find out the significant difference between pre test and post test of airway clearance following research hypothesis and null hypothesis was tested.

H0 : There is no significant effect of halotherapy on airway clearance in experimental group at p is 0.05 level of significance.

Table no- 1: Comparision between pre test and post test score of airway clearance among respiratory problem patient in experimental group using 't' test i.e mean, SD, 't' value, DF,P value.

N = 30

Criteria/ Parameter	Mean±SD	t Value	Df	P Value
Experimental group				
Pre test	63.7±20.4			
		13.9	**29**	**0.000***
Post test	26.3±11.6			

($p \leq 0.05$* Statistically significant)

In the table no - 1 shows there was statistical significant in level of airway clearance between pre test and pre test as calculated total 't' test value with 13.9 ,DF 29 and p value is less than 0.05 level of significant which means halo therapy to increase the airway clearance among patient with respiratory problem. It was proved that research hypothesis was accepted and null hypothesis was rejected.

SECTION-IV

Comparison mean by Unpaired 't' test among experimental group pre test and post test score and control group pre test and post test score.

Table no- 2 Mean, SD, Unpaired t value, p value to assess the effect of halotherapy on airway clearance. **N=n1 +n2 = 30+30**

Pre test					
Experimental Group	63.7±20.4	3.7			
			-0.831	**58**	**0.410 NS**
Control Group	59.8±15.8	2.9			
Post test					
Experimental Group	26.3 ± 11.6	2.1			
			5.749	**58**	**0.000***
Control Group	46.9 ± 15.8	2.9			

($p \leq 0.05$* level of significance)

In the table no -2 shows that the pre-test mean, SD of level of airway clearance in experimental group were 63.7±20.4 with SE was 3.7 and in control group pre test mean ,SD were 59.8±15.8 ,SE 2.9 with -0.831 and DF 58 and p value 0.410 which is not statistically significant ,that means the research hypothesis was rejected.

The post test mean, SD of level of airway clearance in experimental group were 26.3 ± 11.6with SE was 2.1 and in control group post test mean ,SD were 46.9±15.8 ,SE 2.9 with 5.749 and DF 58 and p value 0.000 which is highly statistically significant ,that means the research hypothesis was accepted. The researcher concluded that the halotherapy improves the airway clearance.

SECTION-V

Chi Sqaure analysis to find out the association between the level of airway clearance with selected demographic variables.

To find out the significant association of level of airway clearance with selected socio demographic variables following hypothesis are tested.

H02-There is no significant association between level of airway clearance with selected demographic variable at 0.05 level of significance.

Table -3 Chi-square analysis of age, gender, nature of work,duration of smoking, duration of illness ,comorbid illness, physical activities.

N = n1+n2=30+30

Socio- Demogaphic variables	Chi Square value	Df	P value	Level of Significance
Age (in years)	4.552	2	0.103	Not significant
Gender	0.278	1	0.598	Not significant
Nature of work	8.363	4	0.079	Not significant
Duration of smoking	11.069	3	0.011	Significant
Duration of illness	10.923	3	0.012	Significant
Comorbid illness	1.206	2	0.547	Not Significant
Physical activities	5.277	3	0.153	Not Significant

(p≤0.05* level of significance)

In the table no - 3 Shows that the research hypothesis was accepted and null hypothesis was rejected for duration of smoking and duration of illness and null hypothesis was accepted and research hypothesis was rejected for age, gender, nature of work, comorbid illness and physical activities. Chi square analysis value for duration of smoking, duration of illness are 11.069,10.923.As it present the chi-square association of level of airway clearance with duration of smoking and duration of illness was statistically significant where 'p' value 0.011,0.012 of this calculated chi-square value less than 0.05 level of significant. But there is no significant association with age, gender, nature of work, comorbid illness and physical activities of calculated chi-square value. Where calculated 'p' value of this calculated chi square value is more than 0.05 level of significant.

DISCUSSION:-

The discussion includes the explanation of findings, where the researcher presents findings of the study through critical analysis along with other similar research findings. The section also present the verdict on whether findings of present study, support existing theories.In my present study The mean score in control at post-halotherapy was 46.9 ± 15.8 and that in experimental was 26.3 ± 11.6. Independent sample't' test implied that the average airway clearance assessment score is significantly better in experimental than control group (p=0.000).

The present study finding is supported by a similar study conducted a randomised controlled trial of **Buteyko technique** in a group of adults with asthma. The control group was trained by a physiotherapist in breathing and relaxation techniques. A single centre associated with a university based asthma programme. Asthma control, defined by composite score based on the Canadian asthma consensus report 6 months after completion of intervention. In the Buteyko group the proportion with asthma control increased from 40% to 72%. They concluded that the Buteyko breathing technique was more effective than the Active cycle of breathing technique. [29] The present study finding is supported by a similar study conducted a study on 38 people with asthma aged between 18 and 70. Participants were followed for six months following the intervention. The BBT group exhibited a reduction in level of dyspnoea. They concluded and the results showed that the **Buteyko breathing** technique is safe and efficacious asthma management technique. [30]

CONCLUSION

Study findings revealed that halotherapy was effective therapy in improving the level of airway clearance in the experimental group. So halotherapy can be used as a routine therapy for clearing the airway in clinical setting. The study proved there is a significant difference between post test level of airway clearance among patients with respiratory diseases.

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