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Effect of abdominal breathing exercises on selected physical and physiological parameters of patients with respiratory problems in selected hospitals in Bhubaneswar

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Abstract
Background: Respiratory diseases are the most common chronic diseases in the world. The stark reality is that, each year, 4 million people die prematurely from chronic respiratory disease, In 2015, 10.4 million people developed tuberculosis (TB) and 1.4 million people died from it. Breathing pattern and activities of daily livings are the basis of abnormal patterns in all types of respiratory problems.
Method: Quantitative approach with experimental research design was adopted to study 40 patients with respiratory problems aged between 20-60 years were taken. The duration of the study was 2 weeks & data was collected on day zero and at the end of 2nd week. The subjects were divided into two groups A, and B group. 20 patients in each group were distributed by consecutive sampling. Each sample was assessed according to modified London chest activity of daily living scale for physical parameters and self-structured observational check list of the physiological parameters. Abdominal breathing Exercise was given to experimental group, and the control group receive regular treatment. Post-test was done from each groups. Statistics were applied by using SPSS 20.0.0.
Result: Results were calculated by using 0.05 level of significance. On the basis of statistical analysis the p value for group A(P<.181) is more than 0.05. So the intervention on group A (P>0.05) group B. So Abdominal breathing exercise proves more effective than regular treatment among patients with respiratory problems.
Conclusion; Abdominal exercise breathing exercise is more effective than regular treatment on selected physical and physiological parameters among respiratory problems.

Keywords: Abdominal breathing exercise or Diaphragmatic breathing, respiratory problems

Introduction
Lung disease doesn't play with favorite ones. It affects men, women, children, smokers, and any individual who have never smoked. If lung disease is taking your breath, you do not have to deal with it alone. The term lung disease refers to many disorders affecting the lungs, such as asthma, Bronchitis, Pneumonia, COPD, lung cancer, and many other breathing problems. Some lung diseases can be lead to the respiratory failure [1].
Globally 100-150 million of people suffer from asthma and this number is rising. About 65 million of people suffer from COPD approximately 40 million people have not yet been diagnosed. The WHO global NCD action plan (2013- 2020) follows on from commitments made by heads of state and government in the United Nations political declaration on the prevention and control of NCDs recognizing the primary role and responsibility of governments in responding to the challenge of NCDs and the important role of international cooperation to support national efforts.[2].
Breathing exercises for dyspneic patients helps to strengthen the breathing muscles, gets more oxygen breath with less effort and promotes relaxation. The important breathing exercises that are used are pursed lip breathing (PLB) and diaphragmatic breathing. Pursed-lip breathing has been reported to decrease dyspnoea and thereby improves exercise tolerance and helps in better sleep quality and quality of life [3].
Diaphragmatic breathing technique is the pattern of breathing utilizing the diaphragm which is the chief inspiratory muscle. Diaphragmatic breathing increases relaxation, lymphatic flow & efficiency of gas exchange, most important to maintain proper health of tissues & muscles [4].

Methods and Materials

Quantitative approach with non-experimental comparative research design was adopted. The study was conducted in IPD of pulmonary medicine at IMS & SUM Hospital, Bhubaneswar, Odisha 40 patients with respiratory problems aged between 20-60 years were taken. The duration of the study was 2 weeks & data was collected on day zero and at the end of 2nd week. The subjects were divided into two groups A & B group. 20 patients in each group were distributed by consecutive sampling. Pre - test was done from each subject and assessed according to modified London chest activity of daily living scale for physical parameters and self-structured observational check list of the physiological parameters such as (pulse rate, respiration rate and oxygen saturation level). Intervention1 (Abdominal breathing Exercise) was given to experimental group & the control group receive regular treatment. Posttest was done from each groups. Statistics were applied by using SPSS 20.0.0.

Results

Table 1: Shows frequency and percentage Distribution of demographic characteristics of experimental and control group. N = 40

Frequency and percentage distribution of Socio Demographic Data			Experimental group		Control group	
Sl. No	DEMOGRAPHIC VARIABLES		F	%	F	%
1	Age in year	a)20-35	6	30.0	3	15.0
		b) 36- 55	6	30.0	8	40.0
		c) 56 - 60	8	40.0	9	45.0
2	Gender	a) Male	10	50.0	12	60.0
		b) Female	10	50.0	8	40.0
3	Educational qualification	a)matric	Nil	Nil	Nil	Nil
		b) under matric	8	40.0	7	35.0
		c) Graduation	6	30.0	10	50.0
		d) Under graduation	6	30.0	3	15.0

Table 2: Unpaired t test analysis to compare the effect of abdominal breathing exercise on post test score of physical & physiological parameters among experimental group and control group. N=40

Abdominal breathing	Mean± S.D	SE	t- value	DF	p-value
Experimental group	19.90 ± 7.61	1.70	1.51	38	0.039*
Control Post	23.5 ± 7.45	1.66			

The data in table – 2 depicted that mean and standard deviation of post-test of experimental group was 19.90 ± 7.61 and mean and standard deviation of control group was 23.5 ± 7.45. The unpaired t-test value was 1.51 at 38 df with p value is 0.039 which was statistically significant at p<.05. The standard error at experimental group was 1.70 and standard of error of control group was 1.66. Therefore research hypothesis is accepted and there is a significant difference between effect of abdominal breathing exercise on selected physical and physiological parameters among experimental group and control group.

Discussion

The present study was supported to the similar study conducted by Nutsupa Ubolnuar et al. 2019. This was conducted Effects of Breathing Exercises in Patients with Chronic Obstructive Pulmonary Disease Nineteen studies (n=745), were included. Quality of evidence, was low to moderate. When compared to the control groups, respiratory rate significantly (p≤0.001) improved in the pursed-lip breathing (PLB), ventilatory feedback (VF) plus exercise, diaphragmatic breathing exercise (DBE), and combined BEs. Additionally, PLB significantly improved tidal volume (p<0.001), inspiratory time (p=0.007), and total respiratory time (p<0.001). VF plus exercise significantly improved inspiratory capacity (p<0.001), and singing significantly improved the physical component of QoL, than did the control groups (p<0.001). All BEs did not significantly improve dyspnea, compared to the controls (p>0.05) [5, 6].

This study There is a high level of interest in complementary and alternative medicine in older adults with asthma. Though pharmacotherapy is still the main stay of treatment for asthma, older adults are at particular risk for polypharmacy and adverse effects of medications. There is currently a paucity of research surrounding alternative interventions in this age group. The program developed for this study was acceptable to the majority of subjects, and nearly 90% would recommend them to a friend. However, this randomized controlled study of simple, relatively quick, breathing exercises for asthma in older adults failed to show a difference between intervention and control groups.[7]

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