

A Study to Assess the Effectiveness of Breathing Exercises on the Quality of Sleep among Patients with Dyspnea in Selected Hospitals, Guwahati, Assam

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Abstract: Health has many phases but there is no other way for optimal breathing. Breathing exercises for dyspnea patients help to strengthen the breathing muscles, get more oxygen breath with less effort, and promote relaxation. The objectives of the study are to assess the quality of sleep among patients with dyspnea in experimental group and control group. In this study quasi experimental was done with pre-test post test to determine the effectiveness of breathing exercise on the quality of sleep among patients with dyspnea. 50 samples were selected by convenient sampling technique. Breathing exercises was administered to the subjects in the intervention group for 5 minutes twice in a day for 7 consecutive days and on 7th days post test was collected from the experimental group and control group. Data were analyzed by using descriptive and inferential statistics. The study findings showed that obtained mean pre-test score was 19.72 ± 2.951 and in post-test mean score was 26.88 ± 2.891 with mean difference was 7.16. The effectiveness was tested using paired t test with obtained t value is 10.89 at $df=24$ was statistically significant at $p < 0.05$ level. The study concluded that breathing exercise is effective on the quality of sleep among dyspnea patients.

Keywords: Assess, Effectiveness, Breathing Exercises, Dyspnea, Sleep quality

1. Introduction

“When you can’t breathe, nothing else matters” is the slogan of the American Lung Association.

The Person should be Staying healthy is an obligatory aspects of potent wealth. Health has many aspects but there is no alternative for optimal breathing.

Oxygen plays a vital role in the breathing processes and the metabolism of the living organism. The human body has a respiratory system and the main purpose of the respiratory system in the exchange of gases. The respiratory system allows the physical body to produce energy by supply the body with an endless supply of the oxygen and eliminating CO₂.

The Global Institute for Chronic Obstructive Lung Disease (GOLD) estimates that by 2020, COPD will have ranked third among the world’s sixth most common causes of death and will have been the fifth disabling disease. COPD encompasses two types of obstructive airway disease that is chronic bronchitis and emphysema. Chronic obstructive bronchitis results from inflammation of the bronchi, leading to increased mucus production, chronic cough, and eventual scarring of the bronchial lining. In contrast to those of acute bronchitis, the clinical manifestations of chronic bronchitis continued for at least three months of the year for 2 consecutive years.

George G. S. (2013) conducted a study to assess the effect of breathing exercises on quality of sleep. Pharmacotherapy alone has a limited role in relieving dyspnea and improving the quality of sleep in the dyspnea patients. The complementary and alternative ways can use

for insomnia include aromatherapy, music therapy, massage therapy, breathing and relaxation technique, etc. Among these therapies, deep breathing is very effective and use full technique found to improve quality of sleep among patients with dyspnea.

2. Literature Survey

Organization (WHO) estimates, there are 300 million asthma patients and 210 million COPD patients over the world. Estimates indicate that India accounts for 25 million asthma and 15 million COPD patients. Which means, India accounts for 89% percent of total global asthma and 15million COPD burden globally, 1 out of 6 adult over the age of 34 years has dyspnea. Out Of the 9, 484 participants, 27% reported any dyspnea. In the low-risk subsample (N=4, 329), 16% reported some dyspnea. In multivariate analyses, all covariates were correlated to dyspnea, but only 13% of dyspnea variation was explained.

Öner Cengiz H, Ayhan M, Güner R. (2021) conducted a study on Effect of deep breathing exercise with Triflo on dyspnea, anxiety and quality of life in patients receiving covid-19 treatment. Primary outcomes included oxygen saturation in the blood, respiratory assessment and dyspnea level. Secondary outcomes included anxiety and quality of life. The patients in the deep breathing group had a statistically significant (3.04 ± 0.65), higher SpO₂ level (97.05 ± 1.46) and higher quality of life (77.82 ± 6.77) compared with the patients in the usual care group ($p < 0.05$).

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Objective:

- To assess the quality of sleep among patients with dyspnea in experimental group and control group.
- To evaluate the effectiveness of deep breathing exercises on quality of sleep among patients with dyspnea in experimental group.
- To compare the post test level of quality of sleep among patients with dyspnea in experimental group and control group.
- To find the association between pre-test level of quality of sleep among patients with dyspnea with selected demographic variables in experimental group.
- To find the association between the pre-test level of quality of sleep among patients with dyspnea with selected demographic variables in control group.

3. Methods / Approach

Research methods are the technique used to structure a study, gather and analyze information in a systematic fashion. Research methods are a systemic technique of performing research. So it includes research approach, research design, the study setting, the population, sample and sampling technique. It also includes development and description of data collection tools, procedure for data collection and plan for data analysis.

According to C. R Kothari "Research Methodology is a way to systematically solve the research problem. It may be understood as a science of how research is done scientifically. In research methodology the researcher study the various steps that are generally adopted by a researcher in studying his research problem along with the logic behind them, it is necessary for the researcher to know not only the research methods/techniques but also the methodology.

Section-1

Data on Demographic Variables of Dyspnea Patients

Table 1: Frequency and percentage distribution of Socio-demographic variables

Age in years	Experimental group		Control group	
	f	%	F	%
41-50 years	0	0	2	8
51-60 years	9	36	5	20
61-70 years	12	48	15	60
Above 70 years	4	16	3	12
Gender				
Male	16	64	18	72
Female	9	36	7	28
Marital status				
Married	23	92	25	100
Unmarried	2	8	0	0
Widow/widower	0	0	0	0
Separated	0	0	0	0
Religion				
Hinduism	17	68	17	68
Muslim	3	12	3	12
Christian	5	20	5	20
Hinduism	17	68	17	68
Occupation				
Government	11	44	8	32

Research approach is a broad plan to explore a phenomenon under study. Research approach involves the description of the plan to investigate the phenomenon under study in a structure (quantitative), unstructured (qualitative) or combination of two method (quantitative and qualitative integral approach).

Quantitative research approach was adopted by the researcher to assess the effectiveness of breathing exercise on the quality of sleep among patients with dyspnea in selected hospital, Guwahati, Assam.

4. Result and Discussion

Analysis of demographic profile revealed in experimental group that out of 25 dyspnea patients that majority of the participants 12 (48%) were between the age to 61-70 years, 16 (64%) were males, 23 (92%) were married, 17 (68%) belongs to Hinduism, 11 (44%) belongs to government job, 14 (56%) participates were higher educated, 12 (48%) belongs to Rs 10, 001-20, 000 of monthly income, 20 (80%) belongs not smoking. 10 (40%) suffering from respiratory diseases, 15 (60%) belong to <1 years. 15 (60%) belongs to sleep at night.

Analysis of demographic profile revealed in experimental group that out of 25 dyspnea patients that majority of the participants 15 (60%) were in the age of 61-70 years, 18 (72%) were male, 25 (100%) were married, 17 (68%) belongs to Hinduism. 10 (40%) were in private job, 12 (48%) was highly educated, 10 (40%) belong to Rs 20, 001-30, 000 monthly income, 18 (72%) belongs to not smoking, 13 (52%) belongs to respiratory diseases. 16 (64%) belong to 2-5 years of, 15 (60%) belongs to sleep at night.

Private	9	36	10	40
Unemployed	0	0	1	4
House maker	5	20	6	24
Education				
Illiterate	0	0	1	4
Primary education	1	4	3	12
Secondary education	4	16	0	0
Higher secondary	14	56	12	48
Graduate and above	6	24	9	36
Family income monthly				
< Rs 10, 000	0	0	0	0
Rs 10, 001-20, 000	12	48	7	28
Rs 20, 001-30, 000	10	40	10	40
> Rs 30, 000	3	12	8	32
Any history of smoking habits				
Yes	5	20	7	28
No	20	80	18	72
Medical diagnosis				
Renal diseases	3	12	9	36
Respiratory diseases	10	40	13	52
Endocrine diseases	4	16	1	4
Cardio vascular diseases	5	20	0	0
Blood disorders	0	0	1	4
Skin diseases	3	12	0	0
Duration of illness				
< 1 year	15	60	3	12
2-5 years	10	40	16	64
Above 5 years	0	0	6	24
Continuation breathing difficulty presented at				
Wake up	5	20	5	20
Walking	0	0	3	12
Sleeping at night	15	60	15	60
Exercise	5	20	2	8

Section II

Frequency and percentage distribution of pre-test and post-test level of quality of sleep among patients with dyspnea in experimental group and control group, N=50

Quality of sleep	Experimental group				Control group			
	Pre-test		Post-test		Pre-test		Post-test	
	f	%	f	%	f	%	f	%
Sleep problems seem to be severe	0	0	0	0	0	0	0	0
Have some sleep problems.	9	36	0	0	10	40	7	28
Sleep is in good shape	16	64	14	56	15	60	18	72
Sleep is in great shape	0	0	11	44	0	0	0	0

Section III

Effectiveness of deep breathing exercises on quality of sleep among patients with dyspnea in experimental group, N=25

Experimental Group	Mean	SD	Mean Difference	t test value	df	p value
Pre-Test	19.72	2.951	7.16	10.89	24	0.001*
Post-test	26.88	2.891				

**p<0.05 level of significance

Section – IV

Comparison of post-test level of quality of sleep among patients with dyspnea in experimental group and control group, N=50

Comparison Post-test	Mean	SD	Mean Difference	t test value	df	p value
Experimental Group	26.88	2.891	4.56	4.638	48	0.001*
Control Group	22.32	3.976				

*p<0.05 level of significance

5. Discussion as per the objectives of the research study

Objective 1: To assess the quality of sleep among patients with dyspnea in experimental group and control group.

The result of the study reveal that in experimental group majority of the participants in pre-test i. e 16 (64%) have sleep in a good shape, 9 (36%) have some sleep problems. In control group majority of the participants in pre-test i. e 15 (16%) sleep is in good shape and 10 (40%) have some sleep problems.

The present study finding supported by the study conducted by Mohammad Ali Zohal, Zohreh Yazdi, Amir Mohammad Kazemifar (2013) on Daytime sleepiness and quality of sleep in patients with COPD compared to control group. A study revealed that 120 patients with COPD (79 males and 41 females) and 120 normal individuals responded to the questionnaires. Mean scores of quality of sleep were 8.03 ± 3.66 and 4.2 ± 2.8 in COPD patients and control group respectively. 32.1% of the patients had good sleep quality (PSQI score less than 5) and 67.9% had poor sleep quality.44

Objective 2: To evaluate the effectiveness of deep breathing exercises on quality of sleep among patients with dyspnea in experimental group.

The present study findings showed that mean pre-test score was 19.72 ± 2.951 and in post-test mean score was 26.88 ± 2.891 with mean difference was 7.16. The effectiveness was tested using paired t test with obtained t value is 10.89 at $df=24$ was statistically significant at $p < 0.05$ level. Result revealed that deep breathing exercises were effective in improving the quality of sleep among patients with dyspnea in experimental group.

The present study finding supported by the study conducted by Azam Ghorbani, Fatemeh Hajizadeh, Mohammad Reza Sheykhi (2018) The Effects of Deep-Breathing Exercises on Postoperative Sleep Duration and Quality in Patients Undergoing Coronary Artery Bypass Graft: a Randomized Clinical Trial The initial findings showed that the mean of sleep quality score of patients in the intervention and control groups were 19.72 (2.68) and 18.22 (3.81) respectively. Deep breathing exercise program had a significant effect on sleep quality score in the intervention group compared to the control group.

Objective 3: To compare the post test level of quality of sleep among patients with dyspnea in experimental group and control group.

The result of the study reveal that in experimental group majority of the participants in post-test 14 (56%) have sleep in a good shape and 11 (44%) have sleep in great sleep. In control group the majority of the participant in post-test i. e 18 (72%) have sleep in good shape and 7 (28%) have some sleep problems.

The present study finding supported by the study conducted Amrit Kaur, Mahesh Mitra (2019) Effect of

yogic breathing exercise on quality of sleep in patient with chronic obstructive pulmonary disease The present study finding supported by the study conducted The mean PSQI scores after 4 weeks post-test is (5.67 ± 1.78) . Therefore breathing exercises is one of the non-pharmacological interventions effective in improving sleep quality.

Objective 4: To find the association between pre-test level of quality of sleep among patients with dyspnea with selected demographic variables in experimental group.

The present study findings showed that the demographic variables such as age, gender marital status, religion, occupation, education, family income, history of smoking, duration of illness, continuation of breathing difficulty were found statistically non significant at $p < 0.05$ level with pre-test level of quality of sleep among patients with dyspnea in experimental group.

Objective 5: To find the association between the pre-test level of quality of sleep among patients with dyspnea with selected demographic variables in control group.

The present study findings showed that the demographic variables such as age, gender marital status, religion, occupation, education, family income, history of smoking, duration of illness, continuation of breathing difficulty were found statistically non-significant at $p < 0.05$ level with Pre-test level of quality of sleep among patients with dyspnea in Control group.

6. Conclusion

The main conclusion drawn from the study was that most of the patients with dyspnea had difficulty in sleeping after receiving breathing exercise there was a significant improvement in sleep quality. Samples were familiar and found themselves comfortable and also expressed satisfaction. It is concluded that breathing exercise is effective and improve quality of sleep among dyspnea patients.

7. Future Scope

- The similar study can be conducted by using only one group pre-test and post test to determine the effectiveness of breathing exercise on dyspnea patients.
- The similar studies can be conducted to determine the effectiveness on quality of sleep among patient with different diagnosis.
- The study can be implicated to large number to generalize the study.
- Training Programme for nurses can be given on complementary therapies.
- The study can be conducted to evaluate the knowledge and attitude of breathing exercise in reducing breathing pattern among patients with dyspnea

8. Limitations

- The research study was limited to 50 patients

- The tools was Modified structured tools and hence response was limited.
- Study was limited to 5 minutes.
- Study was conducted only on dyspnea patients.

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