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Original Article

Comparison of Patient Satisfaction and Quality of Life to Buteyko Versus Diaphragmatic Breathing Technique in Patients with Asthma

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ABSTRACT

Background: Asthma is a worldwide disease that can spread anywhere. Mechanism involves a stimulus that triggers bronchioles of lungs causing bronchospasm and evidently making difficult to breath. Tightness in chest, wheezing or whistling sound, pain, recurrent coughing and shortness of breath are some serious symptoms of asthma.

Objective: To compare the patient satisfaction and QOL to Buteyko breathing technique versus diaphragmatic breathing technique for the treatment of asthma.

Methods: It is a cross-sectional study a type of observational study, of patient satisfaction and QOL from the two different breathing techniques, i.e, Buteyko Breathing Technique and Diaphragmatic Breathing Technique. The sample size was 363, from that there were 182-paients of BBT and 181-patients of DBT the patients have already their respective breathing techniques in the hospitals. By the help of Asthma Quality of Life Questionnaire and patient survey questionnaire the satisfaction and Quality of Life of patients was observed.

Results: The Significant difference was observed in the patient's satisfaction. According to this, patients were more satisfied from BBT rather than DBT (P-value=<0.05) There was no statistical significance was observed in QOL of patients with asthma having both breathing techniques. But there was remarkable significance was observed in patients with asthma have to avoid situation or environment having cigarette smoke (P-value .017) and patients feel frustrated due to asthma (P-value=<0.05).

Conclusion: Buteyko breathing technique proved to be more satisfactory in patients than the diaphragmatic breathing. There was no significance difference found in the QOL of patients with asthma with BBT and DBT. Both breathing techniques have nearly same effects on the quality of life of asthmatic patients.

Keywords: Asthma, Quality of Life, Buteyko Breathing Technique, Diaphragmatic Breathing Technique

INTRODUCTION

Asthma is a long lasting and persistent illness affecting millions across the globe i.e. almost 14.6 million women, 10 million men and 7 million children[1]. Most of the time cause of asthma is not known and it is believed that genetic predisposition and environmental factors have a key role in formation of asthma. The condition happens to affect any age whether its childhood, youngsters, adolescents or adults. Mechanism involves a stimulus that triggers bronchioles of lungs causing bronchospasm and evidently making difficult to breath. Tightness in chest, wheezing or whistling sound, pain, recurrent coughing and shortness of breath are some serious symptoms of asthma[2].

Allergens, irritants and other things that are not related to former things, are some major risk factors of this condition. Every person has its own way in reacting towards a certain stimulus triggering asthma. The trending sedentary lifestyle and polluted environment are some major concern for reemission and relapse of asthma. The relapse stage can occur at any time. [3] Reduction in lung function, narrowing of excessive airway during contraction of stimulated muscle are a result of said pathological changes.[4]

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Pavlovich Buteyko invented buteyko training in 1950s at Russia. He suggested that individual with upper chest breathing and those who were mouth breathers were more susceptible to chronic hyperventilation than others[5]. Buteyko breathing methods assists and help in maintenance of normal oxygen and carbon dioxide in bloodstream by normalizing the correct and appropriate breathing patterns. One of the important aspects of this unique method is that an individual is asked to inhale less than normal or more thus making reduced volume breathing a fundamental exercise. The individual is asked to sit erect and relax the abdominal muscles to fullest until a person feels a slight slack of air in[6].

The whole procedure makes some tension in abdomen that along with erect posture and relaxed muscles helps in maintaining the sensation of breathlessness to some extent. For this told reduced volume breathing examiner makes sure that an individual goes through two important phases i.e., Control pauses which requires holding a short breath and Maximum pause which requires holding a longer breath. It all sums up as nasal breathing routine.[7] The control pause has the tendency to decrease the maximum expenditure of carbon dioxide.[8] In contrast the diaphragmatic breathing helps in oxygen delivery. The ultimate goal of this technique is to reach breath hold of 40 seconds comfortably. [9] Disturbance in diaphragmatic breathing can alter functions of various mechanisms causing insufficiency in respiration, COPD, disturbance in sleep and potential mortality.[10]

The diaphragmatic muscles are essential for eighty percent of respiration and thus exercises involving diaphragmatic respiration are responsible for strengthening of said muscles. Often this is also termed as belly respiration. The effectiveness of normally functioning diaphragm helps in improvement of mechanical work of breathing by offering a key role in maintenance of ventilation, diaphragmatic excursion and oxygenation.[11] COPD is also among several fatal disorders that has a huge impact on breathing. Breathing interventions are used in case of minimizing the shortness of breath and lung hyperventilation. To improve quality of life in COPD individuals, it is important to restore normal respiration function, exercise tolerance and carbon dioxide consumption. Diaphragmatic breathing techniques help in penetration of oxygen into lungs approximately 1.5 to 2 times higher than normal mechanism. However some research studies does amplify that diaphragmatic breathing techniques have somehow inconclusive results.[12]

The aim of this observational study was to compare patient satisfaction and quality of life from the two physiotherapy techniques; Buteyko and diaphragmatic breathing, used for the treatment of asthma. This study will guide us in the future in choosing the finer technique for the treatment of asthma, keeping in mind that the patient is satisfied and their quality of life is improved.

MATERIAL AND METHODS

A descriptive cross sectional survey was done to conduct this study. The study was conducted on diagnosed patients of asthma from General Hospital and Shalamar Hospital and Mayo Hospital which have the experience of Buteyko breathing or diaphragmatic breathing techniques. The study was carried out from November 2022 to March 2023 after the approval of ethical committee of university and respected HOD. Non –purposive convenient sampling technique was used for the collection of data. Total of 363 participants with clinically diagnosed, controlled and conscious cases of asthma with age of 18-35years were included in the study. Participants were excluded with history of rib fractures, neurological disorders, COPD patients and previous history of medicine[13]. The data was collected from the General hospital, Shalamar hospital and Mayo hospital. All patients were explained about the whole procedure under the supervision before taking the data consent form signed from the patient. Then by the use of self-administered questionnaire (asthma QOL and then Patient Survey Questionnaire for pulmonary rehabilitation) measure the patient satisfaction and QOL from the Buteyko or diaphragmatic breathing technique. From the results of the questionnaires we measured, how many patients of asthma are satisfied with interventional breathing techniques. After that Data was analyzed using SPSS 22.0. Mean and standard deviation was calculated for quantitative variables while qualitative variables were presented in the form of frequency and percentage. Appropriate statistical tests (chi-square) were used after checking normality of data.

RESULTS

The Asthma Quality of Life Questionnaire (AQLQ) is developed to measure the functional impairments experienced by adults 17 years and older. It has 32 items in four domains (symptoms, activity limitations, emotional function and environmental stimuli).

The AQLQ items are each scored on a 7-point Likert scale, with 1 representing maximal impairment and 7 representing no impairment. The original AQLQ includes 5 patient-specific questions in the activity limitation domain. As part of the initial interview, the patient indicates 5 activity limitations due to asthma. Asthma QOL questionnaire having reliability 0.82-0.88 and test-retest reliability is near 7.0[14].

Table 1: Age of participants

Technique	Frequency	Percentage

BUTEYKO BREATHING TECHNIQUE	182	49.7
DIAPHRAGMATIC BREATHING TECHNIQUE	181	49.5

Patient survey questionnaire for pulmonary rehabilitation is a questionnaire of education and exercise to increase awareness about lungs and disease. Pulmonary rehabilitation aims to reduce symptoms, decrease disability, increase participation in physical and social activities, and improve the overall quality of life (QOL) for patients with chronic respiratory disease. The prediction (derived from past research) that older people would be more satisfied with the service was borne out by the results ($F(4, 1312) = 57.10$; $p < 0.0001$), providing further construct validation. The five specific subscales (doctors, nurses, access, appointments, and facilities), the general satisfaction subscale, and the questionnaire as a whole were found to have high internal reliability (Cronbach's alpha = 0.74-0.95). The results suggest that the PSQ is a valid and internally reliable tool for assessing patient satisfaction with general practitioner services[15].

Table 2: Comparison of Patient Survey Questionnaire between Groups

Patient survey questionnaire	Techniques		P value
	Buteyko breathing technique	Diaphragmatic breathing technique	
More satisfied (1-8)	118	89	<0.05
Moderately satisfied (8-10)	32	41	
Less satisfied (10-13)	32	51	

Table 3: Comparison of Activities between Groups (AQOLQ)

Activities	Techniques		P value
	Buteyko breathing technique	Diaphragmatic breathing technique	
Strenuous Activity			
Extremely limited	22	22	>0.05
Very limited	65	69	
Moderately limited	60	49	
Some limitation	27	30	
A little limitation	6	10	
Not at all limited	2	1	
Moderate Activity			
Totally limited	1	0	>0.05
Extremely limited	9	5	
Very limited	21	24	
Moderately limited	64	75	
Some limitation	54	43	
A little limitation	32	33	
Not at all limited	0	1	
Social Activities			

Totally limited	2	0	>0.05
Extremely limited	8	4	
Very limited	20	23	
Moderately limited	60	57	
Some limitation	49	47	
A little limitation	37	45	
Not at all limited	6	5	

SPSS version 25 was used for the analysis of the data. Tale no 1 showed the age of the participants in both groups. There were 182 patients of BBT with percent 49.7. and patients have DBT were 181 with percent 49.5. Table 2 showed the patient satisfaction according to the patient survey questionnaire there were 118- patients performed BBT were more satisfied, and 89-patients were more satisfied from DBT. There were 32-patients from BBT and 41-patients from DBT were moderate satisfied. Similarly, 32-patients from BBT and 51-patients from DBT were those who were less satisfied with the respective breathing techniques. According to chi-square tests, the p-value for patient survey questionnaire was <0.05, which showed the statistical difference in patient satisfaction from BBT. Table 3 showed the strenuous, moderate and social activities of participants. There were only 02-patients from BBT and 01-patient from DBT reported about no limitation in strenuous activities. The 33-patients from DBT have a little limitation in the moderate activities. There only one patient from DBT reported no limitation in moderate activities. The 06-patients from BBT and 05-patients from DBT have no limitation in social activities. The p value of these activities >0.05 showed that there were no statistical significance in the activities.

DISCUSSION

In previous study, it was mentioned that BBT have better effects on asthma symptoms. The study showed there were a statistical significant difference in asthma symptoms scores at the initial and final visit at the end of second week in group of BBT and asthma exercises (p-value<.05) it was concluded that BBT was more effective than asthma exercises in reducing symptoms of asthma (p.00-.05), BBT was found to be more effective significantly on reducing symptoms of asthma among asthma patients. [16] In current study with P-value=.002 there was statistical significance difference was observed that patients of asthma were more satisfied from Buteyko Breathing Technique as compare to the Diaphragmatic Breathing Technique. But there was significance difference was found in patient satisfaction. It was also mentioned that the patients was observed to be more satisfied with Buteyko Breathing Technique as compare to the Diaphragmatic Breathing Technique with p-value=.002.

In the previous study, breathing exercises may have positive effects on QOL, hyperventilation symptoms and lung function. For improving QOL a study measuring AQLQ was inclusive up-to 03-months, when assessed. From 04-06 months, the results favored breathing exercises which involves BBT and pranayama as well. [17] In current study, BBT and DBT both breathing techniques have no significance difference on the QOL of patients with asthma. but there was statistical significance difference was observed in the patients of asthma had to avoid the situation or environment of cigarette smoke with P-value .017, the feel of frustration in patients due to asthma and also patients wake up in morning with symptoms of asthma with P-value .002 and .009 respectively,

in previous study, Buteyko breathing technique was considered as golden cure for patients of asthma. it was showed that it may reduce the severity of asthma and were highly significant improved after applied Buteyko breathing at p-value <0.001. that study supported Buteyko breathing exercise over the treatment in asthmatic patients. [18] In current study, Buteyko breathing technique considered as better in patient satisfaction as compare to diaphragmatic breathing. There was more significant difference (p=.002). patients were more satisfied from the Buteyko breathing technique as both of breathing techniques Buteyko breathing and diaphragmatic breathing have no significant difference on quality of life of patients with asthma.

In previous study, in previous study, the diaphragmatic breathing considered as the less effective on ventilatory efficacy[19]. As compare to non-specific breathing deep breathing under instructions. The previous study compared the effects of 02-onstuctons, focusing on non-specific breathing and diaphragmatic breathing. For men and women, efficacy was increased during deep breathing was greater under non-specific breathing compares to diaphragmatic breathing. In current study the diaphragmatic breathing has same effects on the QOL of asthmatic patients and it was no effect on the gender of patients. The effect of diaphragmatic breathing was not gender based in both men and women it has same significance.

In previous study the BBT was considered to be more effective in the QOL of patients with asthma. The study showed that the before and after results of the BBT on QOL of asthmatic patients by AQLQ and assessed by patient's interview assessment sheet. According to this BBT was effective for the better QOL in patients with asthma[20]. In currents study, it was observed that both breathing techniques have same effects on the QOL of patients with asthma but there has statistically significant difference was found in the avoidance of cigarette smoke, feel frustration and wake up in morning with symptoms of asthma.

CONCLUSION

In conclusion, Buteyko breathing technique proves to be more satisfactory in patients than the diaphragmatic breathing. There is no significance difference was found in the QOL of patients with asthma with BBT and DBT. Both breathing techniques has nearly same effects on the quality of life of asthmatic patients. The researchers recommend that Buteyko breathing technique be added as a possible medical and nursing intervention in managing asthmatic adults. Further studies regarding Buteyko Method to be conducted, to evaluate its difference from other breathing techniques in controlling and managing asthma attacks, its effect on the community setting, and long-term trials with larger population bases. Handout with Buteyko breathing technique should be distributed and be available for every asthmatic patient admitted to chest department.

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