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THE EFFECTIVENESS OF DIAPHRAGMATIC BREATHING & BUTEYKO BREATHING TECHNIQUE IN PATIENTS WITH ASTHMA

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Abstract

Background: *Asthma is chronic common respiratory condition affecting approximately 300 million people worldwide. Dysfunctional breathing pattern is a common clinical feature in asthmatic patients. Abnormal breathing pattern leads to further pulmonary complications. The aim of this study was to find out the effectiveness of diaphragmatic breathing & Buteyko breathing technique in patients with asthma.*

Method: *40 Asthmatic patients' ages 22-67 years were enrolled for the study through convenience sampling. The study duration was 14 days (2 weeks) & the data taken & recorded at day-1 (baseline data) & at the completion of the durations (post-test data after-14 days). The study participants were randomly assigned into groups; control group (n=20) & the treatment group; (n=20). Each study participants were assessed uniformly according to PEFR, FEVI/FVC & FEVI. The obtained comparative data were collected & analyzed by SPSS.22, with P-value <0.05.*

Results: *The study result shows that Buteyko breathing technique in patients with asthma is more statically effective than the diaphragmatic breathing*

Conclusion; *Buteyko breathing technique is highly effective than diaphragmatic breathing in patients with asthma.*

INTRODUCTION

As per Global Initiative for Asthma (GINA) Asthma is a chronic, common, respiratory inflammatory disorder[1,2]. Asthma is chronic common respiratory condition affecting approximately 300 million people worldwide. Dysfunctional breathing pattern is a common clinical feature in asthmatic patients. Abnormal breathing pattern leads to further pulmonary complications[2], thus, breathing re-education & therapies based on the normalization of breathing patterns are helpful interventions considered worldwide for the asthmatic patients[3]. Asthmatic patients are hypoxic due to hyperventilation [4,5]. This asthmatic hyperventilation leads to further complication of breathing pattern. During the mild to moderate asthmatic attack episodic & repeated hyperventilation leads to shift in

the patient-specific normal homeostatic mechanism & into habitual asthmatic breathing pattern of chronic hidden hyperventilation[5,6].

The Buteyko breathing technique is a breathing exercise, developed in 1950 for the purpose to recondition the breathing patterns using the technique breath control & hold which can effectively alters the asthmatic specific hyperventilation & the low CO_2 as reported by several studies[6]. The effectiveness of Buteyko breathing technique has been reported by several studies[7,8].

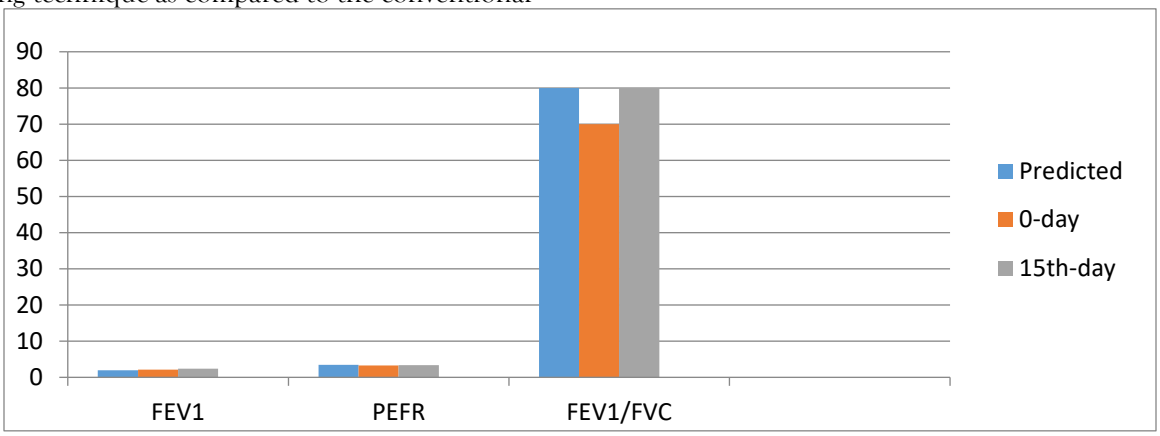
Diaphragmatic breathing is the breathing pattern based on the utilization of the primary respiratory muscles i.e diaphragm[9,10]. It has been reported that Diaphragmatic breathing improves lymphatic flow, increase relaxation, improves venous return & improves the efficiency of the gas exchange which are essential for cells & tissue survival[6]. It has been reported that breathing patterns; normal or abnormal as in asthma, have substantial effects on the clinical parameters of lung functions[8,11]. The aim of this study was to find out the effectiveness of diaphragmatic breathing & Buteyko breathing technique in patients with asthma.

Methodology

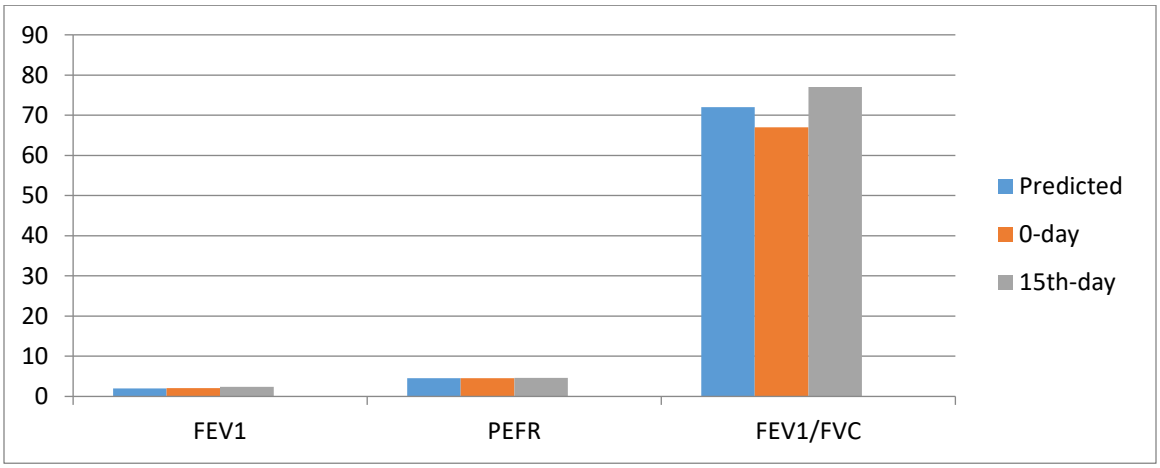
A comparative study design, comprising 40 Asthmatic patients' ages 22-67 years were enrolled for the study through convenience sampling in the King Hospital, swat. The selected study participants were briefed about the study aims & procedure & written consent were taken. Permission from the ethical committees & admin of the concerned hospital were taken before the conduction of the study. The inclusion criteria were; a) Intrinsic asthmatic patients with age 22-67years, willing to participate b) Mild to Moderate intrinsic asthmatic patients as screened before the conduction of study on Pulmonary function test. C) Mild to moderate asthmatic patients who were using 1400mg of short acting Beta-agonist or beclomethsone weekly, while the exclusion criteria were;) Intrinsic asthmatic patients who are out in this age group 22-67years & not willing to participate in the study b) Chronic intrinsic asthmatic patients as screened before the conduction of study on Pulmonary function test. C) Unstable patients who have other co –morbid conditions such as; tumor, stroke, uncontrolled HTN, severe renal failure, hypothyroidism, sickle cell disease, psychological disorders, COPD, pregnancy, gastric disorders, orthopedic abnormity & patients with cognitive & neurological deficits or the patients who have changed their asthmatic medication in the last 2 weeks. The duration of the data collection were 8 months, the duration of the study was 2 weeks while the duration of each treatment session was 60-90 minutes. The materials used for the conduction of this study were; a) Inch tape b) Respiratory evaluation charts c) stethoscope d) Mircropore paper tape e) stop watch f) pen & paper g) pulmonary function test h) consent forms i) data collection forms. The study duration was 14 days (2 weeks) & the data taken & recorded at day-1 (baseline data) & at the completion of the durations (post-test data after-14 days). The study participants were randomly assigned into groups; control group (n=20) & the treatment group; (n=20). The protocol followed as; study subjects were divided into 2 groups; CG & TG; TG patients were taught Buteyko breathing technique while to the CG patient diaphragmatic breathing technique was taught. The procedure was; TG patients were taught Buteyko breathing technique (BBT) for a session of 60-90 minuets/day for 14 days (2 weeks). BBT consist of 1) reduced breathing 2) Nose breathing 3) coughing 4) voluntary hypoventilation 5) breathing exercise while for the CG group the procedure were; Diaphragmatic breathing exercise were given at the gravity-assisted position (semi-fowler position) in such a pattern that the patient initiate breathing predominantly on the accessory muscles of respiration deeply & slowly through the nose , with shoulder, neck & trunk relaxed & quite, while at the same time allowing the abdomen to rise exhale through mouth. The progression of the diaphragmatic breathing exercise toward more difficulty were made changing the position of the patients from supine to sitting to standing & during activity such as; walking or stair climbing. Each study participants were assessed uniformly according to PEFR, FEVI/FVC & FEVI. The obtained comparative data were collected & analyzed by SPSS.22, with P-value <0.05. Paired & un-paired T-test was applied to find the comparative effectiveness between the two procedures.

Results

With P-value < 0.05, results of the study were calculated & analyzed, it shows that Buteyko breathing technique as compared to the conventional diaphragmatic breathing technique are more statistically effective in the normalization asthmatic patients breathing patterns.



Graph-1: Mean values comparison of pre-load, 0-day & the 15th –day for PEFR, FEVI/FVC & FEVI (CG)



Graph-2: Graph-1: Mean values Comparison of pre-load, 0-day & the 15th –day for PEFR, FEVI/FVC & FEVI (TG)

Discussion

The result of this study shows that Buteyko Breathing is clinically & statistically effective as compared to the diaphragmatic breathing in the asthmatic patients which is consistent with a study[12]. The purpose of BBT is to slowly & gradually re-adjust the breathing pattern of asthmatic patients through re-setting the breathing centers of higher CO_2 blood values & reduced minuet ventilation. Control episodic pauses in the asthmatic patients breathing increases the CO_2 concentration which penetrate the blood brain barrie (BBB) & reset the respiratory center in the medulla oblongata.

Nitric oxide (NO) is another feature of BBT as NO is involved mostly in the physiological response such as; bronchodialtions, that is why BBT practitioners insists on nasal breathing as It has been reported that larger % of NO-bodies are made in the paranasal sinuses[4–6]. BBT has been observed also that it reduces volume of breathing by using a combination of mechanism in which increased abdominal muscles & relaxation of accessory muscles are coupled. This coupling of muscles in respiration leads to reduction in the breathing efforts, relaxation of the respiratory muscles, improved diaphragm functions & reduction in the amount of air trapping in the lungs or degree

of hyperventilation. It has also been observed that long breathing in BBT is also effective as it enables the body to reverse the CO_2 gas exchange & thus more time is allowed for the body to re-absorb the CO_2. Extended breath hold repeatedly leads to increase in the production of endogenous anti-oxidants & anaerobic thresholds, which results in the patient's ability to exercise at the higher level of exertion, which has similar effects as breathing at higher altitude or hypoxic training. Stopping & re-starting breathing in the BBT restores breathing patterns in the asthmatic patients.

The other important features which have been reported of BBT is cerebral vasodilatations, resulting from the drop in the O_2 or increase in the CO_2. it has been hypothesized as changing the inputs such as central & peripheral chemoreceptors may change or alter the pattern in the respiration of the asthmatic patients through re-setting the respiratory center, located in the Medulla of the brain.

Conclusion

The study result shows that Buteyko breathing technique in patients with asthma is more statically effective than the diaphragmatic breathing.

Limitations

It includes 1) small sample size & homogenous sampling based on connivance sampling 2) breathing improvement were not linked to its associated physiological effects of airways 3) the asthmatic patients recruited for the study were mild to moderate; chronic asthmatic patient were excluded. 4) it has been reported that PEFR is significantly affected by diurnal variations, thus, a compounding factors diurnal variations may have affected study results.

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Conflict of Interest: None.

REFERENCE:

Science EKTIJ of H, 2021 undefined. The Effect of Buteyko Breathing and Asthma Exercise on Asthma Symptoms among Patients with Asthma. *jurnal.unmuhjember.ac.idSign in*. 2021;13(2):189-195. doi:10.32528/ijhs.v13i2.6449

Fittarsih N, Suwondo A, ... RPIJ of, 2021 undefined. Buteyko Breathing Techniques and Asthma Gymnastics on Improving Oxygen Saturation and Eosynophile Levels among Asma Patients. *ijnhs.netSign in*. Accessed September 1, 2022. http://ijnhs.net/index.php/ijnhs/article/view/433

buteyko breathing technique for asthma - Google Scholar. Accessed September 1, 2022. https://scholar.google.com/scholar?as_ylo=2021&q=buteyko+breathing+technique+for+asthma&hl=en&as_sdt=0,5

Mohammed E, ... FAIJ of, 2021 undefined. Effect of Buteyko Breathing Technique on Asthma Severity Control among School Age Children: Abstract Thesis. *jcbr.journals.ekb.egSign in*. Accessed September 1, 2022. https://jcbr.journals.ekb.eg/article_169406.html

Hassan E, Abusaad F, Journal BMMN, 2021 undefined. Buteyko Breathing Technique: The Golden Way for Controlling Asthma among Children. *journals.ekb.egSign in*. Accessed September 1, 2022. https://journals.ekb.eg/article_213069_de88cdf73efcc090401555b83f070c69.pdf

Mendonça K de, Collins S, open TSB, 2021 undefined. Buteyko method for people with asthma: a protocol for a systematic review and meta-analysis. *bmjopen.bmj.comSign in*. Accessed September 1, 2022. https://bmjopen.bmj.com/content/11/10/e049213.abstract

Patil S, Shilna Rani P, Dhanesh Kumar KU. Implication of Buteyko Breathing Technique in Asthmatic Population: A Literature Review. *J Pharm Res Int*. 2021;33(58A):515-521. doi:10.9734/JPRI/2021/v33i58A34146

Hassan EEM, Abusaad FE, Mohammed BA. Effect of the Buteyko breathing technique on asthma severity control among school age children. *Egypt J Bronchol*. 2022;16(1):45. doi:10.1186/S43168-022-00149-3

Vagedes J, Helmert E, Kuderer S, Medicine KV... T in, 2021 undefined. The Buteyko breathing technique in children with asthma: A randomized controlled pilot study. *ElsevierSign in*. Accessed September 1, 2022. https://www.sciencedirect.com/science/article/pii/S0965229920318495

Swathi G, Kumar T, ... NRIJ of, 2021 undefined. Effectiveness of Buteyko Breathing Technique versus Nadi Shuddhi Pranayama to Improve Pulmonary Function in Subjects with Bronchial Asthma. *Acad*. Accessed September 1, 2022. https://www.academia.edu/download/77683115/IJSHR019.pdf

Santino TA, Chaves GSS, Freitas DA, Fregonezi GAF, Mendonça KMPP. Breathing exercises for adults with asthma. *Cochrane Database Syst Rev*. 2020;2020(3). doi:10.1002/14651858.CD001277.pub4

Hassan E, ... FATEJ of, 2022 undefined. Effect of the Buteyko breathing technique on asthma severity control among school age children. *ejb.springeropen.comSign in*. Accessed September 1, 2022. https://ejb.springeropen.com/articles/10.1186/s43168-022-00149-3.