ORIGINAL RESEARCH PAPER
Volume-9 | Issue-3 | March-2020 | PRINT ISSN No. 2277 - 8179 | DOI : 10.36106/ijsr
INTERNATIONAL JOURNAL OF SCIENTIFIC RESEARCH

EFFECT OF BUTEYKO BREATHING TECHNIQUE ON PEAK EXPIRATORY FLOW RATE IN BRONCHIAL ASTHMA

Physiotherapy

Nikita Rajendra Jagtap — BPT Intern student, Dr. A. P. J. Abdul Kalam College of Physiotherapy, Pravara Institute of Medical Sciences, Loni.

G. D. Vishnu Vardhan* — Associate Professor/HOD Cardio-respiratory Physiotherapy Department, Dr. A. P. J. Abdul Kalam College of Physiotherapy, Pravara Institute of Medical Sciences, Loni. *Corresponding Author

ABSTRACT

Background: Asthma is a chronic inflammatory disorder of the airways causing airflow Limitation. There are various breathing exercises to improve ventilation. The Buteyko Breathing Technique (BBT) helps to decrease the number and severity of attacks as well as improvement in lung function. The aim of the study was to assess the effect of BBT on Peak Expiratory Flow Rate (PEFR) in bronchial asthma.
Methodology: 20 participants with age group 40-70 years were selected. The BBT continued twice daily for 4 weeks. PEFR was assessed before and after intervention by Peak expiratory flow meter. The results were analysed using the student's paired 't' test.
Result: The mean of PEFR value was 103±33.888 pre intervention and 141.5±49.340 post intervention and showed significant improvement in PEFR in 4 weeks.
Conclusion: The study concluded that BBT significantly increases PEFR 4 weeks and decrease the severity of asthma attacks.

KEYWORDS

Buteyko breathing, asthma, peak expiratory flow

INTRODUCTION

Asthma is a chronic inflammatory disorder of the airways that causes frequent attacks of breathlessness wheezing, feeling of chest tightness and cough particularly at night or in the early morning. It is mainly due to airway hyper responsiveness to a variety of stimuli leading to inflammation of the bronchial wall and increased mucus secretion thereby causing bronchoconstriction and airflow Limitation.[1]

Carbon dioxide is a natural smooth muscle relaxant. When we have decreased level of carbon dioxide, smooth muscle may go into spasm. Smooth muscle is covered around the bronchioles in the lungs and arterial blood vessels. Constriction of smooth muscles lining the bronchioles produce the chest tightness of asthma and the sensation that breathing is restricted. Constriction of smooth muscle in arterial walls leads to hypertension, angina and conditions resulting from reduced circulation. When carbon dioxide goes below an optimal level, reduced oxygen is released from the blood to the cells and tissues (known as the **'Bohr Effect'** and the **'Oxy-Haemoglobin Dissociation Curve')**. This can be experienced as breathlessness or Hyperventilation.[2]

Peak expiratory flow rate (PEFR) test measures how fast a person can exhale and measured in litres per second. It is an effort dependent parameter of the lung function. Peak expiratory flow rate in asthmatics is low due to difficulty in expiration.[3]

Dr. Konstantin Buteyko is the inventor of new drug free therapy for bronchial asthma well known as The Buteyko Method.[4] The buteyko breathing method is a breathing technique that uses breath control and breath holding technique to treat hyperventilation. Low volume breathing helps to reduce the effort of breathing, leads to relaxation of respiratory muscles and improves the function of the diaphragm muscle. It can reduce the amount of hyperinflation or trapping of air in the lungs.[5]

- **BUTEYKO BREATHING TECHNIQUE**

Step 1: Keep your mouth closed and only use your nose to breath.

Step 2: Buteyko breathing requires that you breathe into your diaphragm. When breathing make sure your diaphragm inflates and deflates in a controlled manner and your chest remains still.

Step 3: When breathing ensures you breathe in a very shallow manner. This low controlled breathing also applies for the breathing in part.

Step 4 [control Pause]: Sit in an upright position and shallow breath for around 2-3 min, breathe in completely and do not do partial inhales.

After the 2-3 min period when you get to the exhaling part of your breathing, pinch your nose closed and pause your breathing till you feel the need to breath.

Step 5: After holding your breath for a comfortable amount of time, un-pinch your nose and resist the urge to draw in a big breath of air instead continue with the shallow breathing technique.

- **Exercise Program:**

Twice daily for 4 weeks. Two sets of breathing technique consist of 20 minutes' sequence which consists of slow breathing for 3 minutes then break for 10 to 15 seconds then control pause then 3 minutes of slow breathing. Then post scoring were taken at the end of 4th week. [1]

AIM OF THE STUDY:

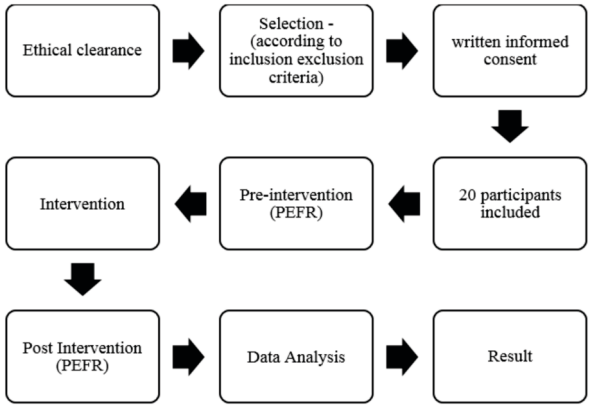
- Effect of Buteyko breathing technique on Peak expiratory flow rate in patients with Bronchial Asthma.

OBJECTIVE OF THE STUDY:

- To assess the peak expiratory flow rate in Bronchial Asthma patients.

METHODOLOGY AND RESEARCH DESIGN:

Ethical clearance was obtained from the Institutional Ethical Committee. The study was an pre post type experimental study which involved convenient sampling. The samples were the Patients with bronchial Asthma referred from Medicine Department in Pravara Rural Hospital, Loni. A sample size of 20 participants with bronchial asthma within the age group of 40 to 70 years were included. The intervention period was twice daily for 4 weeks.



OUTCOME MEASURE:

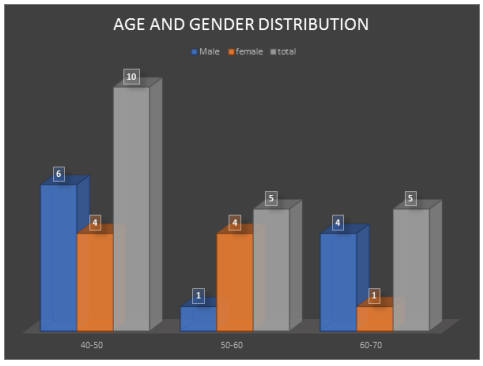
Peak Expiratory Flow Rate:

In the upright sitting position amount of peak expiratory flow were measured by the peak flow meter. The pointer of the peak flow meter switched to zero. Instruction was given to the subjects to hold the peak flow meter level (horizontally) and to keep their fingers away from the pointer. Then asked subject to take a deep breath and close the lips firmly around the mouthpiece & blow as hard as they can as if blowing out candles. The readings on the peak flow meter were measured and the pointer switched back to zero. The procedure repeated for 3 times and highest reading was recorded.[6,7]

Data Analysis And Result

Table No.1: Age And Gender Distribution

AGE GROUP	MALE	FEMALE	TOTAL
40-50	6	4	10
50-60	1	4	5
60-70	4	1	5
TOTAL	11	6	20

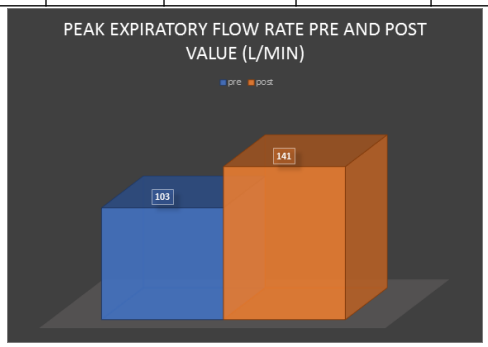


Comparison of pre-intervention and post-intervention values of peak expiratory flow rate values

The mean of Peak expiratory flow rate value was 103±33.888 L/min before intervention and 141.5±49.340 L/min after intervention. The results were calculated by students paired "t" test showed significant difference in peak expiratory flow rate.

Table no 2: Comparison of pre-intervention and post-intervention values of Peak Expiratory Flow Rate

Outcome Measure	Pre intervention Mean + SD	Post intervention Mean + SD	Student's paired "t" test Value	"P" Values And Result
Peak Expiratory Flow Rate	103±33.888 L/min	141.5±49.340 L/min	4.21	P = 0.001 Significant



DISCUSSION AND RESULT:

The present study result shows that practicing buteyko breathing technique helps to reduce hyperinflation through the periods of controlled reduction in breathing known as slow breathing combined with periods of breath holding. Breath holding techniques interspersed with shallow breathing, improves the level of carbon dioxide. The increase in carbon dioxide leads to dilation of smooth muscles in the walls of the bronchi, bronchioles and alveolar duct thus it reduces the peak expiratory flow and lung volume capacity.[8]

A similar research, supporting the results of the present study was conducted by Bowler rt al. observed an improvement in PEFR among the participants who were taught Buteyko breathing exercise. They concluded that those practicing buteyko breathing exercise reduced hyperventilation and their use of bronchodilator as well as better quality of life was observed in these patients.[9]

In the present study there was an improvement in PEFR in period of 4 weeks. Comparison of pre and post values of peak expiratory flow rate were done and it shows the significant improvement in peak expiratory flow rate after the intervention. The mean of Peak expiratory flow rate value was 103±33.888 L/min before intervention and 141.5±49.3L/min after intervention and showed that there is a significant improvement in peak expiratory flow rate values before and after the treatment.

CONCLUSION:

The result of this study shows significant effect of buteyko breathing technique on patients with bronchial asthma. It is significantly decreasing the recurrence and the severity of the bronchial asthma symptoms and it significantly increase peak expiratory flow rate in period of 4 weeks.

LIMITATION OF THE STUDY

The study was conducted on small sample size i.e. 20 samples

The intervention was done only for 4 weeks i.e. a short-term study

FUTURE SCOPE OF STUDY

The study can be conducted on other respiratory conditions with low lung function capacity.

The study can be done to assess other parameters of Lung function capacity.

REFERENCES:

1. Prasanna, K. B., Sowmiya, K. R., & Dhileeban, C. M. (2015). Effect of Buteyko breathing exercise in newly diagnosed asthmatic patients. International Journal of Medicine and Public Health, 5(1).
2. https://buteyko.info/
3. Al-Amin, M., Kabir, L., & Amin, R. (2009). Peak expiratory flow rate (pefr)-a simple ventilatory lung function test. Institute of child and mother health Matuail Dhaka, 13, 1-11.
4. Mohamed, E. M. H., ELmetwaly, A. A. M., & Ibrahim, A. M. (2018). Buteyko Breathing Technique: A Golden Cure for Asthma. American Journal of Nursing, 6(6), 616-624.
5. Hembrom, R. K., Rai, R. H., Chugh, P., & Gupta, V. P. A Study on Immediate Effect of Buteyko Breathing Technique during Submaximal Exercise on Cardio-Respiratory Parameters in Young Adults.
6. Hassan, Z. M., Riad, N. M., & Ahmed, F. H. (2012). Effect of Buteyko breathing technique on patients with bronchial asthma. Egyptian Journal of Chest Diseases and Tuberculosis, 61(4), 235-241.
7. Adeniyi, B. O., & Erhabor, G. E. (2011). The peak flow meter and its use in clinical practice. Afr J Respir Med, 6(2), 5-7.
8. Prem, V., Sahoo, R. C., & Adhikari, P. (2013). Comparison of the effects of Buteyko and pranayama breathing techniques on quality of life in patients with asthma–a randomized controlled trial. Clinical rehabilitation, 27(2), 133-141.
9. Bowler, S. D., Green, A., & Mitchell, C. A. (1998). Buteyko breathing techniques in asthma: a blinded randomised controlled trial. Medical journal of Australia, 169(11-12), 575-578.
10. Narwal, Ravinder, S. N. Bhaduri, and Ajita Misra. "A Study of effects of Buteyko Breathing Technique on Asthmatic Patients." Indian Journal of Physiotherapy & Occupational Therapy 6.4 (2012).