

Implementation of Buteyko Breathing Technique in Nursing Care for Bronchial Asthma Patients: A Case Study

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Abstract: The human respiratory system functions to obtain oxygen from the environment and expel carbon dioxide through the lungs. One common respiratory disorder is bronchial asthma, which can obstruct the airways. A non-pharmacological intervention for asthma patients is the Buteyko breathing technique. This study aims to analyze nursing care through the application of the Buteyko breathing technique in a patient diagnosed with bronchial asthma. A descriptive case study approach was used with one respondent and a literature review. Based on the assessment of Mr. H, the primary nursing problem identified was ineffective breathing pattern. The intervention, based on Evidence-Based Practice, involved performing the Buteyko breathing technique once a day for 15-20 minutes over 3 consecutive days. Results showed improvement: the respiratory rate decreased from 25 breaths/min to 21 breaths/min, oxygen saturation increased from 92% to 96%, and symptoms such as nasal flaring, chest retractions, and use of accessory muscles resolved. Nursing evaluation indicated the problem was resolved, evidenced by the improvement in the breathing pattern. In conclusion, the Buteyko breathing technique positively affects ineffective breathing patterns in Mr. H. It is recommended that the Buteyko breathing technique be considered as a non-pharmacological intervention for patients with bronchial asthma.

Keywords: Bronchial Asthma, Buteyko Breathing Technique, Ineffective Breathing Pattern

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Introduction

The respiratory system in humans plays a vital role in delivering oxygen to body tissues and removing carbon dioxide from the body through the lungs (Hakim & Usmani, 2018; James, 2023). However, certain conditions, such as bronchial asthma, can significantly disrupt normal breathing. Asthma is a chronic inflammatory disease of the airways, leading to symptoms like wheezing, coughing, shortness of breath, and chest tightness. These symptoms result from the narrowing and swelling of the airways, often triggered by environmental factors, allergens, or respiratory infections (Cataletto, 2023; Papi et al., 2018).

Effective management of asthma typically involves pharmacological treatments such as bronchodilators and corticosteroids. However, pharmacological interventions may not always provide sufficient relief or can have side effects with long-term use (Cataletto, 2023; National Heart Lung and Blood Institute, 2022; Papi et al., 2018). As a result, non-pharmacological approaches have gained attention as adjuncts to conventional treatments for asthma management (Papi et al., 2018).

One such non-pharmacological intervention is the Buteyko breathing technique, which focuses on controlled breathing exercises aimed at improving

oxygen delivery and reducing the frequency of asthma attacks. The technique involves shallow, slow breathing patterns and is designed to help patients regulate their breathing and reduce hyperventilation, a common issue in asthma patients (Campbell et al., 2018; Endiyono et al., 2022; Fittarsih et al., 2021; Prayuni & Kristinawati, 2024).

Given the growing interest in non-pharmacological therapies, this study aims to explore the effectiveness of the Buteyko breathing technique in improving breathing patterns and reducing symptoms in patients with bronchial asthma. The results of this study could contribute to nursing care practices and provide a complementary option for asthma management.

Method

This study utilized a descriptive case study design to evaluate the effectiveness of the Buteyko breathing technique as a non-pharmacological intervention for managing bronchial asthma. A case study approach was chosen to provide an in-depth understanding of the patient's response to the breathing technique over a short period of time.

The participant in this study was a male patient (referred to as Mr. H) diagnosed with bronchial asthma. Mr. H presented with symptoms such as shortness of breath, wheezing, and a frequent ineffective breathing pattern. The patient's medical history was reviewed, and informed consent was obtained before starting the intervention. Inclusion criteria for the participant included:

1. A confirmed diagnosis of bronchial asthma.
2. Presence of ineffective breathing patterns as identified during assessment.
3. Ability to perform the Buteyko breathing exercises with minimal assistance.

Intervention

The intervention involved the application of the Buteyko breathing technique, which consists of a series of controlled breathing exercises aimed at reducing hyperventilation and improving the overall breathing pattern. The specific exercises included:

1. Nasal Breathing: Focused on slow, shallow nasal breathing instead of mouth breathing to promote optimal oxygen intake.
2. Breath-Holding: Controlled breath-holding after exhalation to train the respiratory system to utilize air more efficiently.
3. Slow Breathing: Gradual reduction in the rate of breathing to restore natural, calm breathing patterns.

The intervention was carried out for 15-20 minutes once a day for 3 consecutive days, with the patient practicing these techniques under supervision to

ensure correct implementation. The Buteyko breathing technique was chosen based on its effectiveness in managing symptoms and improving lung function in asthma patients.

Data were collected before, during, and after the intervention using the following measures:

1. Respiratory Rate (RR): Measured using a stethoscope or observation of the patient's chest movement.
2. Oxygen Saturation (SpO₂): Measured using a pulse oximeter.
3. Breathing Pattern Assessment: The patient's breathing pattern was observed to identify the presence of symptoms such as nasal flaring, chest retractions, or the use of accessory muscles during breathing.
4. Patient Feedback: The patient's subjective report of symptom relief and any perceived changes in breathing comfort was collected through interviews after each session.

This study adhered to ethical guidelines for medical research. Informed consent was obtained from the patient, and confidentiality was maintained throughout the study. The patient was informed of the voluntary nature of participation and the right to withdraw at any time without consequence. All interventions were conducted in alignment with clinical best practices and with the patient's well-being as the priority.

Result and Discussion

In this case study, the nursing diagnosis identified was ineffective breathing pattern related to airway obstruction. The patient, Mr. H, initially presented with symptoms of shortness of breath, use of accessory muscles, and other signs of respiratory distress. However, after three days of implementing the Buteyko breathing technique, the following improvements were observed:

1. The patient reported no longer feeling short of breath.
2. Objective observations showed that the patient was not using accessory muscles for breathing.
3. There was no nasal flaring, chest retractions, or wheezing detected during the assessment.
4. The respiratory rate (RR) improved from 25 breaths/min at baseline to 21 breaths/min post-intervention.
5. Oxygen saturation improved to 96%, measured without supplemental oxygen.

The intervention was carried out by performing the Buteyko breathing technique once daily for 15-20 minutes over three consecutive days. The results indicate that the Buteyko breathing technique

significantly improved the patient's ineffective breathing pattern, supporting its effectiveness in managing asthma symptoms.

The findings from this case study align with existing literature, which supports the use of the Buteyko breathing technique as an effective non-pharmacological intervention for asthma patients. According to Campbell et al. (2018), Endiyono et al. (2022), Fittarsih et al. (2021), Prayuni & Kristinawati (2024), Hassan et al. (2022) explained that Buteyko breathing helps in reducing asthma symptoms when practiced regularly. The technique focuses on slow, shallow breathing through the nose, which helps maintain normal carbon dioxide (CO₂) levels in the blood. CO₂ plays a critical role in dilating blood vessels and relaxing smooth muscles, which reduces bronchospasm and allows for easier airflow through the bronchi. Fittarsih et al. (2021), Hassan et al. (2022), James (2023), Prayuni & Kristinawati (2024) explained that the reduction in bronchospasm can alleviate symptoms like wheezing and shortness of breath.

However, it is important to note that the Buteyko breathing technique was not the sole intervention applied in this case. While it played a crucial role in improving the patient's breathing pattern, it was supplemented with other nursing interventions and was part of a collaborative care approach. In addition to the breathing exercises, the nursing care plan also included monitoring of vital signs, administering prescribed bronchodilators as needed, and providing patient education on self-care measures for asthma management. These interventions, along with the regular practice of the Buteyko technique, helped optimize the patient's respiratory function.

Furthermore, collaboration with the attending physician was integral in ensuring the comprehensive management of Mr. H's asthma. The physician reviewed the patient's treatment plan and adjusted pharmacological therapies based on the patient's progress, including the use of inhaled corticosteroids and bronchodilators. This interdisciplinary approach, combining non-pharmacological interventions with pharmacological treatments, allowed for a more holistic approach to managing asthma symptoms and improving patient outcomes.

In this study, the improvement in the patient's respiratory rate and oxygen saturation, along with the resolution of nasal flaring, chest retractions, and the use of accessory muscles, confirms the positive impact of the Buteyko technique on ineffective breathing patterns. These results suggest that controlled breathing can be effective in normalizing respiratory physiology by reducing hyperventilation and preventing the loss of

CO₂ during asthma attacks, a key factor in exacerbating symptoms.

The case study also emphasizes the importance of integrating non-pharmacological interventions like Buteyko breathing into asthma care. While pharmacological treatments remain essential, incorporating techniques like Buteyko breathing can offer long-term management strategies, particularly for asthma patients looking for additional ways to control their symptoms without over-reliance on medication.

Conclusion

Nursing evaluation indicated the problem was resolved, evidenced by the improvement in the breathing pattern. In conclusion, the Buteyko breathing technique positively affects ineffective breathing patterns in Mr. H.

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