

Investigating Adult Patients 'Cooperation and Response to Guidance in Incentive Spirometry Post-Operation: A Qualitative Study

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Abstract:

Background: Incentive spirometry (IS) is an important postoperative intervention aimed at reducing respiratory complications such as atelectasis and pneumonia. However, patient cooperation and adherence to IS can be challenging due to various factors.

Objective: This study explores the experiences of adult postoperative patients with incentive spirometry, focusing on factors influencing their cooperation and response to healthcare guidance.

Methods: A qualitative phenomenological approach was used to gain in-depth insights into patients' experiences. Semi-structured interviews were conducted with 20 adult patients who had undergone major abdominal surgery. Data were analyzed using thematic analysis to identify key themes.

Findings: Five major themes emerged: 1) Perceived Understanding and Importance of Incentive Spirometry, 2) Quality of Guidance and Instruction, 3) Physical and Emotional Factors, 4) Motivation and Self-Efficacy, and 5) Environmental and Contextual Influences. Patients with a clear understanding of IS's benefits, who received effective guidance and emotional support, and who were motivated showed higher adherence. Conversely, physical discomfort, low self-efficacy, and inadequate guidance were barriers to consistent use.

Conclusion: Enhancing patient education, providing quality guidance, managing physical discomfort, encouraging emotional support, and creating a supportive hospital environment are crucial for improving adherence to incentive spirometry. Tailored interventions addressing these factors can significantly improve postoperative outcomes.

Keywords: Incentive spirometry, postoperative care, patient cooperation, qualitative study, healthcare guidance, adult patients, adherence, thematic analysis

Introduction

Background:

Incentive spirometry is an essential component of postoperative care aimed at preventing pulmonary complications such as atelectasis, pneumonia, and other respiratory issues (Hall et al, 1996). By encouraging deep breathing and lung expansion, incentive spirometers help maintain lung function and facilitate recovery (Overend et al, 2001). Despite its importance, patient cooperation and adherence to incentive spirometry can be challenging, with various factors influencing the effectiveness of this intervention (Weindler and Kiefer, 2001).

Research Gap:

While numerous studies have quantified the benefits of incentive spirometry, there is a notable gap in qualitative research exploring patients' experiences, cooperation, and responses to the guidance provided by healthcare professionals. Understanding these qualitative aspects is crucial for developing strategies that enhance patient adherence and optimize recovery outcomes (Haines et al, 2013)

Purpose of the Study

This study aims to explore the experiences of adult postoperative patients with incentive spirometry, focusing on their cooperation levels and responses to healthcare guidance. By delving into these aspects, we hope to identify the factors that influence patient behavior and provide insights that can improve clinical practices.

Research Questions:

1. What factors influence patient cooperation with incentive spirometry?
2. How do patients perceive and respond to guidance provided by respiratory therapists?

Significance of the Study:

The findings from this study have the potential to inform and improve clinical practices by highlighting the nuances of patient cooperation and guidance in postoperative care. By understanding patients' perspectives, healthcare providers can tailor their approaches to enhance adherence and ultimately improve postoperative outcomes.

Literature Review

Incentive Spirometry and Postoperative Care:

Incentive spirometry is widely recognized as a beneficial intervention in postoperative care to prevent respiratory complications. The device encourages patients to perform deep-breathing exercises, ensuring proper lung inflation and reducing the risk of complications such as atelectasis and pneumonia (Hall et al, 1996). Studies have shown that using incentive spirometers can significantly decrease the incidence of postoperative pulmonary complications in patients undergoing abdominal and thoracic surgeries (Overend et al, 2001). However, the effectiveness of this tool heavily relies on patient cooperation and proper technique adherence (Elrefaye et al, 2020)

Patient Cooperation and Adherence:

Patient cooperation and adherence to medical interventions like incentive spirometry are critical for achieving desired health outcomes. According to Leventhal et al.'s self-regulation theory, patients' perceptions of their illness and treatment significantly influence their behavior and adherence to medical advice (Leventhal et al, 1998). Factors such as understanding the importance of the treatment, perceived difficulty, and the effort required can all impact patient cooperation (Schulman-Green et al, 2016). Moreover, psychological factors, including motivation, anxiety, and support from healthcare providers and family, play a pivotal role in adherence (Roter et al, 2002).

Healthcare Guidance and Communication:

Effective communication and guidance from healthcare professionals are essential in promoting patient adherence to medical interventions. Studies highlight that clear, concise, and empathetic communication can significantly enhance patients' understanding and willingness to engage in prescribed activities (Street et al, 2009). Bandura's social cognitive theory posits that self-efficacy, or the belief in one's ability to successfully

perform a task, is crucial for behavior change and adherence (Bandura, 1997). Thus, healthcare providers must employ strategies that boost patients' confidence and clarify the importance of incentive spirometry.

Existing Studies on Incentive Spirometry:

Existing research has primarily focused on the quantitative aspects of incentive spirometry, such as its physiological benefits and the reduction in postoperative complications. For instance, a study by Overend et al. (2001) conducted a systematic review and concluded that incentive spirometry, when used correctly, is effective in mitigating postoperative pulmonary complications. Similarly, research by Freitas et al. (2012) emphasized the relationship between the frequency of spirometer use and improved lung function post-surgery. However, qualitative studies exploring patients' subjective experiences, cooperation challenges, and responses to healthcare guidance remain limited. Understanding these qualitative aspects is crucial to tailor interventions that address patients' unique needs and barriers.

The Gap in Literature:

While the quantitative efficacy of incentive spirometry is well-documented, there is a noticeable lack of qualitative insights into patient experiences and cooperation. Few studies delve into the psychosocial and communication aspects that influence patient adherence to incentive spirometry post-operation. This gap highlights the need for in-depth qualitative research to explore adult patients' perspectives, providing a comprehensive understanding that can inform and improve clinical practices.

Methodology

Research Design:

This study employed a qualitative research design, specifically utilizing a phenomenological approach to explore the lived experiences of adult postoperative patients using incentive spirometers. The phenomenological approach was chosen to gain deep insights into how patients perceive and respond to incentive spirometry and the guidance provided by respiratory therapist.

Participants :

The study sample comprised 20 adult patients who had undergone major abdominal surgery within the last 30 days at a Surgical unit in a military hospital. Participants were selected using purposive sampling to ensure a diverse range of experiences and were recruited based on the following inclusion criteria:

- Adults aged 18 years or older.
- Underwent major abdominal surgery (e.g., colectomy, gastrectomy).
- No cognitive impairments that would hinder participation in interviews.
- Willingness to participate and provide informed consent.

Data Collection Methods:

Data were collected through semi-structured interviews, which provided the flexibility to explore patients' experiences in depth while maintaining a consistent framework across interviews. Each interview lasted approximately 45-60 minutes and was conducted in a private setting within the hospital or via a secure online video platform, depending on the participant's preference and postoperative recovery status.

The interview guide included open-ended questions designed to elicit detailed descriptions of patients' experiences with incentive spirometry, their cooperation, and their responses to the guidance provided by Respiratory therapist. Example questions included:

- "Can you describe your experience with using the incentive spirometer after your surgery?"
- "How did the healthcare team explain the importance and usage of the incentive spirometer to you?"

- "What factors influenced your willingness to use the spirometer as recommended?"
- "How did you feel about the guidance and support provided by the respiratory therapist?"

Data Analysis:

Interviews were audio-recorded with participants' consent and transcribed verbatim for analysis. The data were analyzed using thematic analysis, following the six-step process outlined by Braun and Clarke (Braun and Clarke, 2006).

1. Familiarization: Immersing in the data by reading and re-reading the transcripts.
2. Coding: Generating initial codes by identifying significant statements and patterns.
3. Theme Development: Grouping codes into potential themes that capture the essence of the data.
4. Review of Themes: Refining themes to ensure they accurately represent the data set.
5. Defining and Naming Themes: Assigning clear definitions and names to each theme.
6. Writing Up: Integrating the themes into a coherent narrative for the final report.

NVivo software was utilized to assist with data management and coding. The trustworthiness of the analysis was ensured through peer debriefing, member checking, and maintaining an audit trail of the analytical decisions.

Ethical Considerations:

The study was conducted in accordance with ethical guidelines and received approval from ethics committee. Informed consent was obtained from all participants before data collection. Participants were assured of confidentiality and anonymity, and they were informed of their right to withdraw from the study at any time without any consequences.

Data Saturation:

Data collection continued until data saturation was achieved, meaning no new themes or insights emerged from the interviews. Data saturation was reached after 20 interviews, ensuring a comprehensive understanding of the phenomena under study.

Study Limitations:

The study's limitations include its reliance on self-reported data, which might be subject to recall bias. Additionally, the sample was limited to patients from a single tertiary care hospital, potentially limiting the generalizability of the findings.

Findings

The qualitative analysis of the interviews with postoperative patients revealed several themes regarding their cooperation with and response to guidance on using incentive spirometers. The following major themes emerged:

Theme 1: Perceived Understanding and Importance of Incentive Spirometry:

Participants' Perceived Understanding

Many patients expressed a clear understanding of the incentive spirometer's purpose and benefits. This understanding seemed to positively influence their cooperation.

- P1: "I knew it was important for my lungs. The nurse explained that it helps prevent pneumonia, so I made sure to use it."
- P5: "They showed me how the spirometer works and why I needed to use it. That made a lot of sense to me."

However, some patients reported a lack of initial understanding, which hindered their engagement with the device.

- P7: "At first, I didn't really understand why I had to do it. It was just another thing they told me to do."

Theme 2: Quality of Guidance and Instruction:

Effective Guidance

Patients who received clear, demonstrative guidance from respiratory therapist felt more confident in using the spirometer.

- P3: "The therapist was great. She showed me exactly how to use it and checked if I was doing it right."

- P9: "The instructions were very clear, and they made sure I knew how to use it before they left."

Ineffective Guidance

On the other hand, patients who received vague or rushed instructions struggled with the spirometer and were less likely to use it consistently.

- P8: "The nurse was in a hurry and just handed it to me. I wasn't really sure what to do with it."

- P12: "I got a quick demo, but I felt I needed more help to understand it properly."

Theme 3: Physical and Emotional Factors:

Physical Discomfort and Fatigue

Several patients admitted that postoperative pain and fatigue impacted their ability to use the spirometer effectively.

- P2: "It was hard to do it when I was in pain. Sometimes I just couldn't take deep breaths."

- P10: "I was so exhausted after surgery that remembering to use it was tough."

Emotional Support

Patients highlighted the importance of emotional support from both respiratory therapist and family members in motivating them to use the spirometer.

- P4: "Having my family remind me and encourage me helped a lot. I wanted to get better for them."

- P11: "The nurses were very supportive, always checking on me and motivating me to use it."

Theme 4: Motivation and Self-Efficacy:

High Motivation

A strong desire to recover quickly and avoid complications motivated some patients to adhere closely to the spirometer regimen.

- P6: "I just wanted to get out of the hospital as soon as possible, so I followed all the instructions."

- P14: "Knowing that this small device could prevent serious complications kept me motivated."

Low Self-Efficacy

Conversely, patients who doubted their ability to use the spirometer effectively were less consistent in their usage.

- P13: "I wasn't sure if I was doing it right, so I didn't use it as much."

- P15: "I felt frustrated because I wasn't hitting the targets, and that discouraged me from trying."

Theme 5: Environmental and Contextual Influences:

Accessibility and Convenience

The availability of the spirometer and the ease of fitting its use into their daily routine were mentioned as factors promoting adherence.

- P16: "Having it by my bedside made it easy to remember and use."

- P18: "It became part of my daily routine. I used it after meals as they suggested."

Hospital Environment

Some patients noted that the hospital environment, such as frequent visits from respiratory therapist and reminders, facilitated their spirometer use.

- P17: "The staff reminded me frequently, which helped a lot."

- P20: "The consistent follow-up from the nurses made sure I didn't forget to use it."

Summary of Findings

Overall, the study highlighted that patients' cooperation with and response to guidance on using incentive spirometers were influenced by their understanding of its importance, the quality of guidance received, physical and emotional factors, motivation levels, and environmental conditions. Tailoring guidance to address these factors and providing ongoing support can enhance patient adherence and improve postoperative outcomes.

Discussion

Interpretation of Findings:

The findings of this study highlight several key factors influencing adult patients' cooperation with and response to guidance on using incentive spirometers following major abdominal surgery. These factors include their understanding of the spirometer's purpose, the quality of guidance and instruction received, physical and emotional factors, motivation and self-efficacy, and environmental influences.

Understanding and Importance:

Patients' comprehension of the importance of incentive spirometry emerged as a crucial determinant of their adherence. Similar to previous research, our findings indicate that when patients understand the benefits of an intervention, they are more likely to engage in it (Hall, 1996; Overend, 2001). Participants who received comprehensive explanations about how the spirometer helps prevent postoperative complications such as pneumonia and atelectasis were more diligent in using the device.

Quality of Guidance:

Effective guidance and instruction by healthcare professionals significantly influenced patients' confidence and ability to use the spirometer correctly. This resonates with Bandura's social cognitive theory, which posits that effective knowledge transfer and skill development enhance self-efficacy and adherence to health behaviors (Bandura, 1997). Healthcare providers who took the time to demonstrate proper spirometer use and offered feedback helped patients feel more competent, thereby improving their cooperation.

Physical and Emotional Factors:

Postoperative pain and fatigue were notable barriers to consistent spirometer use, as reported by several participants. This is consistent with the literature that recognizes physical discomfort as a significant barrier

to postoperative rehabilitation activities (Schulman-Green et al, 2016; Sullivan et al, 2021). Additionally, emotional support from both respiratory therapists and family members played a vital role in encouraging patients to persist with the spirometer despite discomfort, aligning with prior findings that social support positively affects recovery and adherence (Roter et al, 2002).

Motivation and Self-Efficacy:

Motivation and self-efficacy emerged as critical factors influencing adherence. Patients motivated by a desire to recover quickly or avoid complications demonstrated greater adherence, consistent with existing studies that link higher motivation levels to better health outcomes (Ryan and Deci, 2000). On the flip side, low self-efficacy and frustration with the inability to achieve spirometer targets discouraged some patients, underscoring the need for respiratory therapists to set realistic and individualized goals to maintain patient motivation (Bandura, 1986).

Environmental Influences:

The hospital environment and the accessibility of the spirometer influenced patients' adherence. Regular reminders and having the spirometer within easy reach facilitated more consistent use. This aligns with findings from Haines et al., which highlight the significance of environmental cues and structured routines in promoting rehabilitation activities (Haines et al, 2013).

Implications for Practice

The study's findings suggest several practical recommendations for respiratory therapists:

1. Comprehensive Patient Education:

- Ensuring that patients understand the importance and benefits of incentive spirometry can significantly enhance adherence. Providing clear, consistent information using different modalities (verbal explanations, written materials, demonstrations) can cater to diverse learning preferences.

2. Quality Interaction and Demonstration:

- respiratory therapists should spend adequate time demonstrating the correct use of the spirometer and providing personalized feedback. Regular follow-up and reinforcement can further encourage correct usage.

3. Managing Physical Discomfort:

- Addressing postoperative pain and fatigue through appropriate pain management strategies and scheduling spirometry sessions when patients are less fatigued can improve compliance.

4. Emotional and Social Support:

- Encouraging the involvement of family members in the patient's recovery process and fostering a supportive environment within the healthcare team can bolster patient motivation and adherence.

5. Setting Realistic Goals:

- Establishing achievable, individualized goals can help maintain patient motivation and prevent discouragement. Offering positive reinforcement and celebrating small successes can enhance self-efficacy.

Limitations

The study has some limitations. The reliance on self-reported data may introduce recall bias, and the relatively small sample size from a single hospital might limit the generalizability of the findings. Further studies with larger, more diverse populations are needed to validate these results.

Future Research

Future research should explore interventions designed to address the identified barriers and facilitators of spirometer use. Studies assessing the effectiveness of comprehensive educational programs, personalized guidance, and enhanced support systems in improving adherence to incentive spirometry could provide valuable insights. Additionally, investigating the long-term impact of such interventions on postoperative outcomes would further substantiate their benefits.

Conclusion

Understanding the multifaceted factors that influence patient cooperation with and response to incentive spirometry post-operation is essential for developing effective strategies to improve adherence. By addressing educational, physical, emotional, motivational, and environmental aspects, respiratory therapists can significantly enhance the recovery process and reduce postoperative complications in patients undergoing major abdominal surgery.

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