Collaborative Strategies between Nurses and Physiotherapists to Improve Compliance with Pulmonary Rehabilitation in COPD Patients

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Abstract

Chronic obstructive pulmonary disease (COPD) presents significant challenges for patients and healthcare systems, with pulmonary rehabilitation being a crucial intervention to improve outcomes. However, patient adherence remains a major barrier. This study explores the impact of coordinated physiotherapy and nursing interventions on COPD patients' adherence to pulmonary rehabilitation in a tertiary hospital setting. A mixed-methods approach was employed, involving 120 COPD patients divided into an intervention group receiving coordinated care and a control group receiving standard care. Quantitative findings showed significant improvements in adherence, exercise capacity, and quality of life in the intervention group. Qualitative analysis revealed enhanced motivation, improved patient understanding, and emotional support as key facilitators of adherence. These results underscore the importance of interprofessional collaboration in enhancing rehabilitation outcomes for COPD patients.

Keywords: **COPD, pulmonary rehabilitation, physiotherapy, nursing, interprofessional collaboration, adherence, quality of life**

Introduction

Chronic obstructive pulmonary disease (COPD) is a leading cause of morbidity and mortality worldwide, affecting millions of individuals and presenting significant challenges to healthcare systems (World Health Organization, 2023). Pulmonary rehabilitation has been established as an essential component of comprehensive care for COPD patients, significantly improving exercise tolerance, symptom control, and quality of life (Spruit et al., 2013). However, adherence to pulmonary rehabilitation programs remains a critical barrier, with many patients facing difficulties in maintaining consistent participation due to various physical, psychological, and logistical challenges (McCarthy et al., 2015).

Effective collaboration between healthcare professionals is crucial in addressing these challenges and enhancing the outcomes of pulmonary rehabilitation for COPD patients. In particular, the combined efforts of physiotherapists and nurses have the potential to provide a more holistic approach to patient care. Physiotherapists are instrumental in guiding patients through individualized exercise regimens, while nurses play a vital role in patient education, symptom monitoring, and providing psychological support (Dunn et al., 2019). When physiotherapists and nurses collaborate effectively, they can help motivate patients,

address barriers to participation, and ensure that rehabilitation is delivered in a patient-centered manner, which ultimately improves adherence and outcomes.

Despite the recognized benefits of collaborative care, there is a need for more research into how such interprofessional collaboration can impact patient adherence and outcomes in pulmonary rehabilitation. This study aims to explore the impact of coordinated physiotherapy and nursing interventions on patient compliance with pulmonary rehabilitation in COPD patients, and how these efforts influence overall respiratory function and quality of life. By identifying key elements of successful collaboration, this research seeks to provide insights into best practices for enhancing adherence to pulmonary rehabilitation in this population.

Literature Review

Pulmonary rehabilitation has been recognized as one of the most effective non-pharmacological interventions for patients with COPD, improving exercise capacity, dyspnea, and health-related quality of life (Spruit et al., 2013). The benefits of pulmonary rehabilitation, however, depend largely on patient adherence to the program. Studies have consistently shown that adherence rates to pulmonary rehabilitation are suboptimal, often due to a combination of factors such as physical limitations, lack of motivation, transportation issues, and inadequate social support (McCarthy et al., 2015; Burtin et al., 2011).

Interprofessional collaboration, particularly between physiotherapists and nurses, has been highlighted as a key factor in addressing these barriers and enhancing patient adherence to rehabilitation programs. Physiotherapists contribute their expertise in exercise prescription and functional rehabilitation, while nurses bring critical skills in patient education, chronic disease management, and psychosocial support (Dunn et al., 2019). Together, their complementary roles enable a more comprehensive approach to patient care, which can improve both patient engagement and outcomes. A study by Fan and colleagues (2012) found that COPD patients who received care from a multidisciplinary team, including physiotherapists and nurses, demonstrated higher adherence to rehabilitation and reported greater improvements in quality of life compared to those who received standard care.

The importance of patient education in COPD management cannot be overstated. Nurses are particularly well-positioned to educate patients about the disease, the benefits of pulmonary rehabilitation, and strategies for self-management, including medication adherence and lifestyle modifications (Cecins et al., 2008). Such education has been shown to increase patient empowerment, reduce anxiety, and improve adherence to rehabilitation programs. Physiotherapists, on the other hand, play an essential role in designing and delivering individualized exercise programs that are safe and effective for COPD patients, thereby enhancing functional capacity and reducing symptoms such as dyspnea (Bianco et al., 2010).

In addition to education and exercise prescription, psychological support plays a critical role in the success of pulmonary rehabilitation. COPD is often accompanied by anxiety and depression, which can negatively impact a patient's ability to adhere to rehabilitation (Yohannes et al., 2010). Nurses are well-equipped to provide emotional support and identify patients who may need additional mental health interventions, thereby addressing one of the key barriers to adherence. The collaborative approach between physiotherapists and nurses can ensure that patients receive comprehensive care that addresses both their physical and psychological needs, ultimately improving adherence to pulmonary rehabilitation.

Another important factor in successful pulmonary rehabilitation is the continuity of care and follow-up. A study by Bourbeau et al. (2003) emphasized that structured follow-up by healthcare professionals, including physiotherapists and nurses, can significantly reduce hospital admissions and improve long-term adherence to pulmonary rehabilitation. Continuity of care allows healthcare providers to monitor progress, adjust treatment plans as needed, and maintain patient motivation over time.

While the benefits of interprofessional collaboration in COPD management are well-documented, there are still gaps in understanding the specific mechanisms by which physiotherapist-nurse collaboration impacts adherence and patient outcomes. More research is needed to identify best practices and optimize the roles of these professionals in pulmonary rehabilitation programs. Additionally, the challenges faced by healthcare teams, such as communication barriers and role ambiguity, need to be explored to enhance the effectiveness of interprofessional collaboration in COPD care (Gallefoss& Bakke, 1999).

Methodology

This study was conducted at a tertiary hospital with a well-established pulmonary rehabilitation program. The research employed a mixed-methods approach, combining quantitative and qualitative data to comprehensively assess the impact of coordinated physiotherapy and nursing interventions on COPD patients' adherence to pulmonary rehabilitation.

Study Design

A quasi-experimental design was used to evaluate the outcomes of coordinated physiotherapy and nursing interventions compared to standard care. Patients with a confirmed diagnosis of COPD who were eligible for pulmonary rehabilitation were recruited from the hospital's pulmonary rehabilitation unit. Participants were divided into two groups: an intervention group receiving coordinated care from both physiotherapists and nurses, and a control group receiving standard care. The study was conducted over a six-month period to allow for sufficient follow-up and assessment of patient outcomes.

Participants

A total of 120 COPD patients participated in the study. Inclusion criteria included a confirmed diagnosis of COPD, enrollment in the pulmonary rehabilitation program, and the ability to provide informed consent. Patients with significant comorbidities that could interfere with participation in rehabilitation (e.g., severe cardiovascular disease) were excluded. Participants were randomized into the intervention (n=60) and control (n=60) groups.

Intervention

The intervention group received a coordinated care approach involving both physiotherapists and nurses. Physiotherapists provided individualized exercise programs focusing on aerobic, strength, and flexibility training, tailored to each patient's abilities and limitations. Nurses conducted educational sessions on disease management, medication adherence, and coping strategies. Additionally, nurses provided psychological support to address any emotional concerns that patients experienced during rehabilitation. Both physiotherapists and nurses held joint weekly meetings to discuss patient progress and adapt care plans as needed.

The control group received standard pulmonary rehabilitation care, which included exercise sessions led by physiotherapists but without the additional coordinated support from nurses.

Data Collection

Data were collected at baseline, mid-intervention (three months), and post-intervention (six months). Quantitative data included measures of adherence (number of sessions attended), exercise capacity (six-minute walk test), respiratory function (spirometry), and health-related quality of life (St. George's Respiratory Questionnaire). Qualitative data were collected through semi-structured interviews with patients in the intervention group to explore their experiences with the coordinated care approach and its impact on their adherence to the rehabilitation program.

Data Analysis

Quantitative data were analyzed using descriptive and inferential statistics. Comparisons between the intervention and control groups were made using t-tests for continuous variables and chi-square tests for categorical variables. Qualitative data from the interviews were transcribed verbatim and analyzed using thematic analysis to identify key themes related to patient experiences, barriers to adherence, and perceived benefits of the coordinated care approach.

Findings

Quantitative Findings

The quantitative findings showed significant improvements in the intervention group compared to the control group across multiple outcomes. The average number of rehabilitation sessions attended was significantly higher in the intervention group ($M = 22.5$, $SD = 4.8$) compared to the control group ($M = 16.3$, $SD = 5.2$), $p < 0.01$. Additionally, exercise capacity as measured by the six-minute walk test improved more significantly in the intervention group (mean increase of 65 meters) compared to the control group (mean increase of 35 meters), $p < 0.05$. Improvements were also observed in health-related quality of life scores, with the intervention group showing a greater reduction in St. George's Respiratory Questionnaire scores (mean reduction of 15 points) compared to the control group (mean reduction of 8 points), $p < 0.05$.

Outcome Measure	Intervention Group (n=60)	Control Group (n=60)	p-value
Number of sessions attended	22.5 (SD = 4.8)	16.3 (SD = 5.2)	< 0.01
Six-minute walk test (meters)	+65 (mean increase)	+35 (mean increase)	< 0.05
Quality of life (SGRQ score change)	-15 (mean reduction)	-8 (mean reduction)	< 0.05

Qualitative Findings

The qualitative analysis revealed several key themes and sub-themes related to patient experiences with the coordinated care approach. Three main themes emerged: Enhanced Motivation, Improved Patient Understanding, and Emotional Support.

Theme 1: Enhanced Motivation
- Sub-theme 1.1: Encouragement from Healthcare Team

- Participant 4: "The physiotherapist and nurse kept pushing me to do my best. It felt like they believed in me, and that motivated me to keep going."

- Sub-theme 1.2: Accountability

- Participant 11: "Knowing that both the nurse and the physiotherapist were tracking my progress made me feel accountable, and I didn't want to let them down."

Theme 2: Improved Patient Understanding
- Sub-theme 2.1: Disease Management Education

- Participant 7: "The nurse explained everything about COPD and why the exercises were important. It helped me understand what I needed to do and why it mattered."

- Sub-theme 2.2: Exercise Techniques

- Participant 15: "The physiotherapist showed me how to do the exercises correctly, and it made a big difference in my ability to complete them without pain."

Theme 3: Emotional Support
- Sub-theme 3.1: Addressing Anxiety

- Participant 9: "I often felt anxious about my breathing, but the nurse would talk me through it and help me calm down."

- Sub-theme 3.2: Building Confidence

- Participant 2: "Having both the physiotherapist and nurse support me made me feel more confident that I could handle the rehabilitation program."

Discussion

The findings of this study demonstrate the significant impact that coordinated physiotherapy and nursing interventions can have on improving adherence to pulmonary rehabilitation programs for COPD patients. The intervention group, which received coordinated care from both physiotherapists and nurses, showed higher adherence, improved exercise capacity, and better quality of life compared to the control group. These results highlight the importance of an interprofessional approach in managing chronic conditions like COPD, where patient adherence is often challenged by physical, psychological, and logistical barriers.

The quantitative data suggest that the coordinated care approach was effective in improving several key outcomes, including attendance at rehabilitation sessions, exercise capacity, and quality of life. The higher number of sessions attended by patients in the intervention group compared to the control group underscores the role of collaborative support in encouraging consistent participation. The increase in six-minute walk test distances and the reduction in St. George's Respiratory Questionnaire scores further demonstrate the physical and psychosocial benefits of coordinated care. These findings are consistent with previous research

showing that multidisciplinary approaches can lead to improved health outcomes for patients with chronic respiratory conditions (Fan et al., 2012).

The qualitative findings provide deeper insight into how the coordinated care approach influenced patient experiences. Enhanced motivation was a recurring theme, with participants describing how the encouragement and accountability provided by both physiotherapists and nurses motivated them to adhere to the program. This suggests that the dual support system plays a crucial role in maintaining patient engagement, particularly for those who may struggle with self-motivation. Improved patient understanding was also highlighted, as participants reported gaining a clearer understanding of COPD management and the importance of rehabilitation through the educational efforts of nurses. This increased understanding likely contributed to greater adherence, as patients were more informed about the benefits of rehabilitation.

Emotional support emerged as another key theme, with participants emphasizing the importance of having both a physiotherapist and nurse available to address their anxieties and build their confidence. COPD is often associated with anxiety and depression, which can negatively affect a patient's willingness to engage in rehabilitation (Yohannes et al., 2010). By providing psychological support, nurses helped alleviate these emotional barriers, which may have contributed to the observed improvements in adherence and quality of life. These findings align with previous studies that emphasize the value of addressing the psychological needs of COPD patients as part of a comprehensive care plan (Gallefoss& Bakke, 1999).

One of the strengths of this study is the mixed-methods design, which allowed for a comprehensive evaluation of both quantitative outcomes and patient experiences. The combination of quantitative data and qualitative insights provides a more holistic understanding of the benefits of coordinated care for COPD patients. However, the study also has limitations. The quasi-experimental design and the lack of blinding may introduce potential biases, and the sample size, while adequate for detecting differences in key outcomes, may limit the generalizability of the findings to other settings. Future research should consider larger, randomized controlled trials to further validate the effectiveness of coordinated physiotherapy and nursing interventions in pulmonary rehabilitation.

The findings from this study have important implications for clinical practice. Healthcare systems should consider implementing structured, interprofessional rehabilitation programs that involve both physiotherapists and nurses to improve patient adherence and outcomes. Training programs that emphasize interprofessional collaboration, effective communication, and shared decision-making could enhance the quality of care for COPD patients. Additionally, addressing logistical barriers, such as providing transportation assistance or remote rehabilitation options, may further improve adherence rates and ensure that more patients can benefit from pulmonary rehabilitation.

In conclusion, this study demonstrates that coordinated physiotherapy and nursing interventions significantly improve adherence to pulmonary rehabilitation and enhance both physical and psychosocial outcomes for COPD patients. By working together, physiotherapists and nurses can provide a more comprehensive, patient-centered approach that addresses the multiple challenges faced by COPD patients, ultimately leading to better health outcomes and quality of life.

Ethical Considerations

Ethical approval was obtained from the ethics committee prior to the commencement of the study. All participants provided written informed consent, and confidentiality was maintained throughout the study.

Patients were informed that participation was voluntary and that they could withdraw from the study at any time without affecting their standard of care.

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