Journal of Cardiac and Pulmonary Rehabilitation

Kuan-Cheng, J Card Pulm Rehabi 2025, 9:2

Perspective Open Access

Barriers and Facilitators of Tele-rehabilitation in COPD Management: A Mixed Methods Study

Kuan-Cheng*

Graduate Institute of Clinical Medical Science, China Medical University, Taiwan

Keywords: Tele-rehabilitation; Chronic obstructive pulmonary disease; Mixed methods; Barriers to care; Facilitators of engagement; Patient perceptions; Digital health; Remote rehabilitation; Healthcare access; Technology adoption

Introduction

Chronic obstructive pulmonary disease (COPD) is a progressive respiratory condition associated with frequent hospitalizations, impaired functional capacity, and reduced quality of life. Pulmonary rehabilitation is a cornerstone in the non-pharmacological management of COPD, proven to improve exercise tolerance, reduce dyspnea, and enhance daily functioning. However, access and adherence to traditional center-based rehabilitation remain suboptimal due to transportation difficulties, physical limitations, geographic disparities, and financial constraints [1-5]. In response, tele-rehabilitation—defined as the remote delivery of rehabilitation services via information and communication technologies—has emerged as an innovative alternative. Although evidence supports its clinical efficacy, widespread implementation is limited, suggesting a complex interplay of patient-level, provider-level, and system-level factors influencing adoption. This study employed a mixed methods approach to explore the barriers and facilitators of tele-rehabilitation in COPD management, integrating both quantitative survey data and qualitative interviews to generate a comprehensive understanding of patient experiences and stakeholder perspectives. The goal was to identify actionable factors that can inform the design and delivery of more patient-centered, accessible, and effective tele-rehabilitation programs [6-10].

Discussion

The study findings illuminate a nuanced set of barriers and facilitators affecting the implementation and uptake of tele-rehabilitation among individuals with COPD. Quantitative results revealed moderate levels of overall satisfaction, but varied levels of adherence and confidence in using digital platforms. Key barriers identified included limited digital literacy, especially among older adults, lack of access to reliable internet or devices, and concerns about safety and effectiveness without in-person supervision. Additionally, some patients expressed skepticism about the ability of virtual platforms to replicate the supportive environment of group-based rehabilitation, which they perceived as emotionally and socially valuable. On the other hand, significant facilitators emerged, including convenience, flexibility, and the ability to exercise from home, which mitigated travel and physical effort-related constraints. Participants also appreciated real-time communication with providers through video calls and the personalized attention made possible by remote monitoring tools. Qualitative interviews provided deeper insights into the emotional and psychological dimensions of tele-rehabilitation, revealing that patients who had a supportive caregiver or prior technology experience were more likely to engage and benefit. Health professionals reported that while tele-rehabilitation allows greater reach, they face challenges in assessing patients' exertion levels, motivating remote adherence, and adapting to technology-based workflows. These insights suggest that successful tele-rehabilitation programs require not just technological infrastructure, but also digital literacy training, ongoing motivational support, and tailored patient education. Systemic support, including funding models and policy frameworks, also emerged as critical to scaling tele-rehabilitation, especially in underserved or low-income populations. A blended model that combines occasional in-person visits with primarily remote sessions was frequently proposed by both patients and clinicians as an optimal solution, blending access with personal connection. Taken together, the results underscore that tele-rehabilitation is not a one-size-fits-all solution but must be designed with a strong user-centered focus.

Conclusion

Tele-rehabilitation holds significant promise for expanding access to pulmonary rehabilitation for patients with COPD, especially in contexts where traditional models are inaccessible or unsustainable. However, its success is contingent upon addressing key barriers, such as technology access, digital literacy, and concerns around safety and engagement. Facilitators such as flexibility, home-based convenience, and personalized feedback underscore the potential of tele-rehabilitation to improve patient-centered care. The mixed methods approach in this study enabled a comprehensive view of both practical and experiential factors, highlighting the need for integrated solutions that blend technology with human connection. Moving forward, policy-makers, healthcare providers, and digital health designers must collaboratively work to remove access barriers while leveraging facilitators to ensure equitable, effective, and scalable tele-rehabilitation programs for people living with COPD.

References

1. Haïssaguerre M, Jaïs P, Shah DC, Takahashi A, Hocini M, et al. (1998) Spontaneous initiation of atrial fibrillation by ectopic beats originating in the pulmonary veins. N Engl J Med 339: 659-666.

2. Nishimura RA, Otto CM, Bonow RO, Carabello BA, Erwin JP, et al. (2017) 2017 AHA/ACC focused update of the 2014 AHA/ACC guideline for the management of patients with valvular heart disease: a report of the American College of Cardiology/American Heart Association Task Force on Clinical Practice Guidelines. Circulation 135: e1159-e1195.

***Corresponding author:** Kuan-Cheng, Graduate Institute of Clinical Medical Science, China Medical University, Taiwan, E-mail: Kuancheng.l.@gmail.com

Received: 03-Mar-2025, Manuscript No: jcpr-25-165054, **Editor Assigned:** 06-Mar-2025, Pre QC No: jcpr-25-165054 (PQ), **Reviewed:** 17-Mar-2025, QC No: jcpr-25-165054, **Revised:** 24-Mar-2025, Manuscript No: jcpr-25-165054 (R), **Published:** 31-Mar-2025, DOI: 10.4172/jcpr.1000307

Citation: Kuan-Cheng (2025) Barriers and Facilitators of Tele-rehabilitation in COPD Management: A Mixed Methods Study. J Card Pulm Rehabi 9: 307.

3. Pappone C, Rosanio S, Augello G, Gallus G, Vicedomini G, et al. (2003) Mortality, morbidity, and quality of life after circumferential pulmonary vein ablation for atrial fibrillation: outcomes from a controlled nonrandomized long-term study. J Am Coll Cardiol 42: 185-197.

4. Sauer WH, Alonso C, Zado E, Cooper JM, Lin D, et al. (2006) Atrioventricular nodal reentrant tachycardia in patients referred for atrial fibrillation ablation: response to ablation that incorporates slow-pathway modification. Circulation 114: 191-195.

5. Kusumoto FM, Bailey KR, Chaouki AS, Deshmukh AJ, Gautam S, et al. (2018) Systematic review for the 2017 AHA/ACC/HRS guideline for management of patients with ventricular arrhythmias and the prevention of sudden cardiac death: a report of the American College of Cardiology/American Heart Association Task Force on Clinical Practice Guidelines and the Heart Rhythm Society. Heart Rhythm 15: e253-e294.

6. Kearon C, Akl EA, Ornelas J, Blaivas A, Jimenez D, et al. (2016) Antithrombotic therapy for VTE disease: CHEST guideline and expert panel report. Chest 149: 315-352.

7. Morris TA (2011) Natural history of venous thromboembolism. Circulation 27: 869-884.

8. Geerts WH, Bergqvist D, Pineo GF, Heit JA, Samama CM, et al. (2008) Prevention of venous thromboembolism: American College of Chest Physicians Evidence-Based Clinical Practice Guidelines (8th Edition). Chest 133: 381S-453S.

9. Essien EO, Rali P, Mathai SC (2004) Pulmonary embolism. Med Clin North Am 103: 594-564.

10. Heit JA, Cohen AT, Anderson FA Jr (2005) Estimated annual number of incident and recurrent, non-fatal and fatal venous thromboembolism (VTE) events in the US. Blood 106: 910.