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ગુજરાત ટેકનોલોજીકલ યુનિવર્સિટી

(ગુજરાત સરકારના ગુજરાત અધિનિયમ ક્રમાંક : ૨૦/૨૦૦૭ દ્વારા સ્થાપિત)

Accredited with A++ Grade by NAAC

Abstract of the Thesis



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Faculty: Pharmacy

Discipline/Branch: Pharmaceutical Sciences

Title of the Thesis: Role of Pulmonary Rehabilitation in Improving Quality of Life in Patients with Compromised Respiratory Function

Abstract

Objective

To evaluate the effects of a supervised pulmonary rehabilitation (PR) program on dyspnea, functional capacity, and quality of life (QoL) in patients with impaired respiratory function as a result of chronic respiratory disorders (CRDs) such as asthma, COPD, and interstitial lung disease.

Methods

This prospective, single-arm, pre-post interventional (quasi-experimental) study included 115 patients (average age 53.8 years; 23% male) from Sparsh hospitals in Ahmedabad, India, after obtaining ethical approval. The PR program included aerobic and strength training, education, and mental health support. The outcomes measured were the six-minute walk distance (6MWD), the UCSD Shortness of Breath Questionnaire (SOBQ), the St. George's Respiratory Questionnaire (SGRQ), and the Short Form-36 (SF-36). Wilcoxon signed-rank, Spearman correlation and MANOVA were used to analyze the data.

Results

Post-PR, 6MWD increased significantly (mean 363m to 375m; $p < 0.001$), with improved oxygen saturation and reduced heart rate. Less dyspnea was indicated by a decrease in SOBQ scores (mean 73.9 to 63.2; $p < 0.001$). SF-36 improvements in all physical and mental domains (all $p < 0.001$) were accompanied by improvements in SGRQ total scores (mean 84.8 to 58.03; $p < 0.001$). Positive correlations between improvements in QoL and 6MWD were found ($r = -0.45$ to -0.62 ; $p < 0.01$). Subgroup analyses confirmed benefits across gender, BMI, and diagnoses.



Conclusions

PR program greatly improves exercise tolerance, lowers dyspnea, and boosts disease-specific and overall quality of life in various chronic respiratory disease patients. This supports its inclusion in, Indian chronic care plans for better patient outcomes and less strain on healthcare resources.

This PhD Thesis would be useful for:

This thesis would be useful for clinicians, rehabilitation specialists, and healthcare policymakers, as it provides region-specific evidence that a supervised pulmonary rehabilitation program significantly reduces dyspnea (SOBQ) and improves disease-specific (SGRQ) and general health-related quality of life (SF-36) in patients with chronic respiratory disorders, including asthma, COPD, and interstitial lung disease. It supports the integration of structured pulmonary rehabilitation into chronic respiratory care pathways in resource-limited settings and provides baseline data for future large-scale, controlled, multicentre studies.

List of Publication(s):

1. Chacko S, Shah G, Patel T, Tripathi AR, Anand IS, Shah C. Impact of Pulmonary Rehabilitation on Quality-of-life Metrics in Patients with Chronic Respiratory Diseases: A Comparative Analysis of SF-36, SGRQ, and SOBQ Outcomes. Journal of Pharmacology and Pharmacotherapeutics. 2025;0(0). <https://doi.org/10.1177/0976500X251350484>
2. Chacko, S., Shah, G., Patel, T., & Tripathi, A. (2025). Respiratory revitalization: The transformative journey of pulmonary rehabilitation and its far-reaching consequences. Journal of Population Therapeutics and Clinical Pharmacology, 32(1), 1365–1374. <https://doi.org/10.53555/sfw1es06>
3. Chacko, S., & Shah, G. (2026). Comparative analysis of functional capacity improvements through 6MWD testing across different respiratory conditions: Implications for targeted pulmonary rehabilitation. International Journal of Pharmaceutical Investigation, 16(1), 283–289. <https://doi.org/10.5530/ijpi.20260451>