



## **Rural barriers to pulmonary rehabilitation access: A qualitative study in India**

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**Abstract- Background:** A multidisciplinary, evidence-based strategy known as pulmonary rehabilitation (PR) has been shown to enhance the functional ability and quality of life of people with long-term respiratory conditions. Despite its advantages, PR is still not widely available or used, especially in rural areas.

**Objective:** The purpose of this study was to investigate how patients with long-term respiratory disorders and medical professionals in rural Karnataka, India, perceive the obstacles to pulmonary rehabilitation.

**Methods:** Semi-structured interviews with 24 individuals (12 patients with chronic respiratory problems and 12 healthcare professionals) were used in this qualitative study design. Purposive sampling was used to choose participants from three rural districts. With the aid of NVivo software, data were examined using the theme analysis approach developed by Braun and Clarke.

**Results:** Five main themes surfaced: (1) a lack of knowledge and misunderstandings regarding pulmonary rehabilitation; (2) transportation and geographic difficulties; (3) a lack of trained staff and healthcare infrastructure; (4) sociocultural and gender-specific limitations; and (5) financial constraints. Patients regularly complained about the challenges of long-distance travel to tertiary medical facilities and their ignorance of PR. In rural primary healthcare centers, providers reported a lack of PR programs and a scarcity of physiotherapists.

**Conclusion:** The results highlight the various obstacles that rural communities encounter while trying to obtain PR. A multifaceted strategy is needed to address these issues, including decentralization of PR services, policy-level reforms, health education initiatives, and capacity building for rural healthcare professionals. These tactics have



the potential to enhance outcomes for individuals with chronic respiratory conditions and close the gap between rural and urban access to pulmonary treatment.

**Keywords-** Pulmonary Rehabilitation; Rural Health; Access Barriers; Chronic Respiratory Disease; Qualitative Study.

## I. Introduction

In India, the prevalence of chronic respiratory conditions, especially asthma, post-tuberculosis (TB) lung disease, and chronic obstructive pulmonary disease (COPD), is high and steadily rising. In patients with chronic respiratory disorders, pulmonary rehabilitation (PR), an affordable, evidence-based intervention, has proven to increase functional capacity, lessen symptoms, and improve quality of life. <sup>1</sup> Despite this, PR program availability and uptake are still disproportionately low, particularly in rural areas, which are home to more than 65% of India's population. <sup>2</sup>

Key obstacles to PR participation have been highlighted by several research conducted in high-income nations, including a lack of patient knowledge, transportation issues, and disjointed referral routes. <sup>3</sup> These investigations, however, are mostly quantitative and take place in health systems with ample resources. The lived experiences of people navigating rural health systems with little rehabilitation infrastructure are not well documented in qualitative studies from low- and middle-income nations.

In India, there is a noticeable gap between rural patient access and tertiary-level service availability. The majority of rehabilitation services are primarily unavailable to rural residents because they are focused in urban academic or private organizations. Furthermore, little is understood about how social, economic, and cultural factors could impact rural patients' decision-making and PR participation. Developing fair and culturally sensitive rehabilitation techniques requires an understanding of these obstacles.

The purpose of this study is to investigate how rural patients with long-term respiratory conditions perceive pulmonary rehabilitation, its availability, and their involvement in it. To obtain a thorough understanding of the environmental, physical, and psychological obstacles that people encounter in a rural Indian environment, a qualitative technique was selected.

## II. Research Questions

1. What are the perceived obstacles that people with chronic respiratory diseases in rural India face when trying to get pulmonary rehabilitation?
2. What obstacles make it difficult for them to follow or finish a pulmonary rehabilitation program?

### Methods –

#### Design

This qualitative study examined the lived experiences of people with chronic respiratory conditions with reference to access to pulmonary rehabilitation (PR) in rural India using a phenomenology approach. Each participant had a single time point for



semi-structured, in-depth interviews. The design adhered to the principles set forth by the Consolidated Criteria for Reporting Qualitative Research (COREQ). Because of the design, no blinding nor randomization were necessary.

#### **Participants, therapists, centres**

**Participants:** In Chikkaballapur, Karnataka, India, 70 adult patients with chronic respiratory conditions were gathered from the outpatient sections of district hospitals and local health centres. Age  $\geq 40$  years, a clinical diagnosis of COPD, asthma, or post-tuberculosis lung illness for at least six months, living in a rural area (as defined by the Government of India), and a willingness to participate and give informed consent were among the inclusion criteria. Individuals who required hospitalization due to an acute exacerbation or cognitive impairment were not included.

**Therapists and Centres:** Trained physiotherapists connected to Shantha College of Physiotherapy handled the recruitment and interview process. The recruitment centers lacked PR sections and solely offered regular medical services. Since there were no official PR initiatives in place at the research locations, participants' opinions were based on their exposure to the current healthcare system without any prior PR training.

#### **Intervention**

Since this was an exploratory, non-interventional study, no intervention was given. Instead, participants discussed their opinions and experiences with pulmonary rehabilitation, how easy it is to access, and what factors affect their willingness or capacity to engage if the program is offered. Before starting open-ended questions, interviewers used a standardized verbal prompt to guarantee conceptual clarity when explaining PR.

#### **Outcome measures**

Perception of obstacles to obtaining and maintaining pulmonary rehabilitation was the main result. Responses to a semi-structured interview guide were used to gauge these perceptions, which were then grouped according to a theme framework. Cultural views on respiratory sickness and rehabilitation, prior exposure to or referrals to such services, and stated awareness of PR were examples of secondary outcomes.

Responses covered contextual impairments (e.g., financial burden, stigma), activity constraints (e.g., dyspnea during commuting), and participation restrictions (e.g., inability to travel for sessions). The length of the interviews varied from 25 to 40 minutes. Every interview was captured on audio, verbatim transcribed, and translated into English for analysis.

#### **Data analysis**

Based on current guidelines for thematic saturation in qualitative research, an initial sample size of 60 was calculated. Five more interviews were undertaken to assure completeness after recruitment proceeded until two independent researchers confirmed thematic saturation at the 65th interview.

Two researchers independently coded the transcripts using an inductive thematic analysis method once they were put into the NVivo software. Disagreements over coding were settled through dialogue. Data-driven thematic development followed



Braun and Clarke's (2006) six-phase methodology, which includes familiarization, code generation, topic search, theme review, theme definition and naming, and report production. Key concepts were illustrated with statements taken verbatim. Since this analysis was non-quantitative, no statistical tests were performed.

### III. Results

#### Flow of Participants, Therapists, and Centres through the Study

Ninety-three people in all were screened for eligibility. Seventy of them agreed to join and satisfied the inclusion requirements. Cognitive impairment ( $n = 12$ ), recent acute exacerbation ( $n = 7$ ), and unwillingness to consent ( $n = 4$ ) were among the reasons for exclusion.

Every one of the 70 participants finished the entire interview procedure. There were no dropouts. Four basic health centres and one district hospital in Chikkaballapur, Karnataka, served as the recruitment sites. Four qualified physiotherapists from the Shantha Group of Institutions' Department of Physiotherapy conducted each interview.

#### Participant Demographics

Participants were 59.3 years old on average (SD 11.8). Thirty-one (44%) women and 39 (56%) men were present. 38 patients (54%), 18 (26%), and 14 (20%) were diagnosed with chronic obstructive pulmonary disease (COPD), post-tuberculosis lung disease, and asthma, respectively (Fig 1).

In terms of education, 24 (34%) of the participants had finished primary school, 18 (26%) had secondary-level education or higher, and 28 (40%) were illiterate (Fig 2).

#### Barriers to Accessing Pulmonary Rehabilitation

The interviews revealed four key themes (Table 1) that represent the obstacles that rural communities face in obtaining and maintaining PR services

##### 1. Limited Awareness and Understanding of Pulmonary Rehabilitation

Prior to the interview, the majority of participants (65/70, 93%) had never heard of the term "pulmonary rehabilitation." Many others thought it was a medical treatment or surgery. Even patients receiving care in district hospitals said they were never told about PR. The main obstacle to participation was this ignorance.

"I assumed that rehabilitation was only for stroke victims. I had no idea it could alleviate dyspnoea." A man, age 63

##### 2. Inadequate Healthcare Infrastructure and Referrals

Despite numerous outpatient visits, more than half of the participants (37/70, 53%) reported never being referred for any kind of rehabilitation. PR services were not provided by any of the primary health centres. Many participants complained that they were only given medicine when they were sent home.

"My village and the surrounding area do not have such a facility. The doctor just prescribes medication and tells me to return in a month." A woman, aged 59

##### 3. Socioeconomic Barriers and Indirect Costs

Despite the fact that public centres provided free healthcare, 46 participants (66%) found that indirect costs—such as transportation, lost wages, and caregiver



accompaniment—were major obstacles. Participants reported commuting 18.5 km (SD 6.2) on average to receive care at the district level.

41 (59%) of the participants said that they would have to forsake daily pay labour in order to attend a multi-day PR program, which would put a strain on their finances.

"I lose my daily pay check to travel, even if it's free. I can't afford that". 52-year-old man

#### **4. Psychosocial and Cultural Influences**

Thirty-two individuals (46%) talked about the embarrassment and stigma that come with having persistent respiratory symptoms, especially coughing frequently. Household responsibilities were cited by women, particularly homemakers, as a primary barrier to attending rehabilitation sessions.

"I can't abandon my kids and chores for this. Who is going to handle things?" 48-year-old woman

Consistent treatment was also impeded by community attitudes. According to several individuals, repeatedly seeking treatment for dyspnoea was interpreted as a sign of weakness or indolence.

### **IV. Discussion**

This qualitative study sheds important light on the various obstacles that people in rural India have when trying to obtain pulmonary rehabilitation (PR). The most noteworthy and innovative discovery is that, even among patients undergoing long-term treatment for chronic respiratory conditions, there remains a general lack of knowledge of PR. This suggests a serious weakness in primary care patient education and referral processes. Although ignorance of PR has been shown in other settings, it is startling and worrisome that almost all study participants knew nothing about it. <sup>3</sup>

The absence of accessible infrastructure was found to be another important obstacle. According to the participants, they were never sent to rehabilitation facilities and were treated mostly with medicine. This illustrates the pressing need for decentralized, community-based PR services and reflects the urban-centric distribution of physiotherapy and rehabilitation programs in India. The World Health Organization's focus on integrated, people-centered health services in rural and resource-constrained settings is consistent with these findings. <sup>2</sup>

Even in public health settings where services are ostensibly free, the study also pointed out indirect costs as a significant obstacle. Many found it logistically and financially challenging to consider regular rehabilitation attendance due to the distance they had to go, the loss of their daily pay, and the necessity for family support. These results highlight the significance of developing low-cost, locally delivered PR models that could expand access without putting additional financial strain on people, like home-based tele-rehabilitation programs or mobile rehabilitation units. <sup>1</sup>

Cultural and psychosocial factors were also quite important. Two significant but little-discussed obstacles were identified as gendered responsibilities and community stigma. Women also reported having trouble juggling self-care and family responsibilities, and some participants mentioned how the community's beliefs deterred them from



repeatedly seeking care for "normal" aging-related dyspnoea. This highlights the need for social norm-addressing public health communication tactics that enable men and women to actively manage chronic illness without feeling ashamed. <sup>4</sup>

These obstacles are not specific to India, but their combination in this context—where socioeconomic limitations, infrastructure, and health literacy converge—makes the findings especially applicable to other LMICs. To solve them, multifaceted solutions are needed. The integration of rural PR in national non-communicable illness programs should be a top priority for policymakers and health administrators. At the same time, physiotherapists who practice in rural regions need to have clinical training as well as abilities in fundamental program building, culturally sensitive communication, and community involvement. <sup>1, 4</sup>

The use of a strong theme analysis and a sizable rural sample are two of this study's advantages. Nonetheless, a number of restrictions must be noted. First, the study was restricted to a single district, which would have limited its applicability to other Indian rural situations. Second, participants' perceptions were based on hypothetical exposure after a brief description of PR, which may have influenced replies because they had not personally experienced PR. Lastly, the study omitted the viewpoints of healthcare professionals, which might have deepened our understanding of systemic impediments. In conclusion, this study shows that improving PR access in rural India calls for planned, culturally relevant initiatives that incorporate infrastructure development, financial support systems, and education. It is not just a question of adding more services. The results highlight the pressing need for grassroots implementation strategies suited to India's rural environment as well as top-down policy changes. <sup>2, 4</sup>

## V. Conclusion

Decentralization of services, culturally relevant education, and policy-level initiatives that lower expenses and enhance referral networks are all necessary to remove obstacles to PR in rural India.

## References

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Table 1 - Key Themes and Frequency

Theme	n (%) of Participants Reporting
Unaware of pulmonary rehabilitation	65 (93%)
Never referred to PR services	37 (53%)
Reported cost and travel as major barriers	46 (66%)
Cited cultural/family responsibilities	32 (46%)

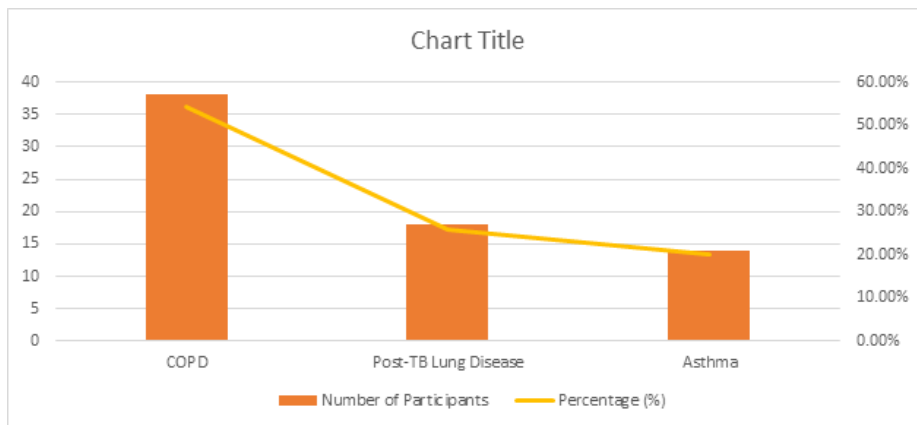


Figure 1: Diagnosis Distribution among Participants

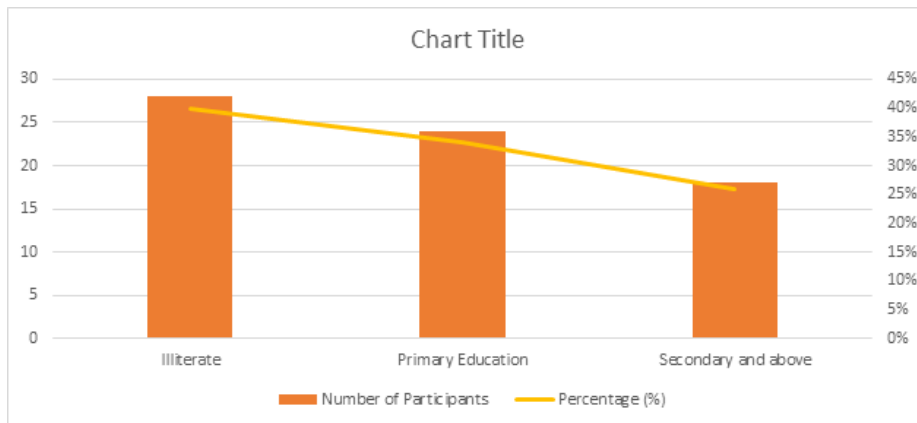


Figure 2: Educational Background of Participants