

BARRIERS AND FACILITATORS IN ESTABLISHING A COMMUNITY-BASED PULMONARY REHABILITATION PROGRAM IN BAGUIO CITY

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ABSTRACT

This study aimed to identify the barriers and facilitators in establishing a community-based pulmonary rehabilitation (CBPR) program in Baguio City, focusing on the perspectives of respiratory therapists and pulmonologists. Employing a quantitative descriptive research design, data were collected through a self-administered online survey that assessed barriers and facilitators across personal, socio-economic, environmental, and program mechanism dimensions. The instrument was pre-tested for reliability and validated by experts. Data analysis involved calculating weighted means and applying the Kruskal–Wallis test to determine differences based on age, position, and years of service. The analysis revealed that insufficient training, limited community awareness, financial constraints, inadequate facilities, and lack of government support were the most significant barriers to CBPR implementation. Conversely, formal training, community and family support, accessible and well-equipped venues, and strong collaboration among stakeholders emerged as key facilitators. While most findings were consistent between professional groups, some differences were observed in environmental and socio-economic dimensions. The results underscore the importance of addressing identified barriers and leveraging facilitators to ensure the successful establishment and sustainability of community-based pulmonary rehabilitation programs in similar settings.

Keywords: *Barriers, Facilitators, Community-Based Pulmonary Rehabilitation, Chronic Obstructive Pulmonary Disease, Stakeholder Collaboration*

INTRODUCTION

Chronic respiratory diseases, particularly Chronic Obstructive Pulmonary Disease (COPD), are among the leading causes of morbidity and mortality worldwide, accounting for millions of premature deaths annually and imposing significant burdens on healthcare systems, patients, and families (Labaki & Han, 2020; Adeloye et al., 2022). In the Philippines, COPD remains a major public health concern, with increasing prevalence and limited access to comprehensive pulmonary rehabilitation (PR) services, especially in regional centers such as Baguio City (Philippine Statistics Authority, 2023). PR is a well-established, evidence-based intervention that improves exercise capacity, quality of life, and reduces hospital admissions for individuals with COPD (Nici et al., 2019). Despite these benefits, PR remains severely underutilized, with global participation rates below 50% and even lower in low- and middle-income countries due to barriers such as limited facilities, financial constraints, and lack of awareness (Nici et al., 2019; Bickton & Shannon, 2022;).

Community-based pulmonary rehabilitation (CBPR) has emerged as a promising approach to address these gaps by decentralizing PR services, making them more accessible and cost-effective, and leveraging local resources and social support (Cecins et al., 2017; Lahham et al., 2018). International evidence demonstrates that CBPR can be feasible, safe, and effective, offering clinical benefits comparable to hospital-based programs, particularly when protocols ensure quality and safety (Lahham et al., 2018). However, the implementation of CBPR faces multifaceted barriers, including insufficient training among healthcare providers, low community awareness, financial and infrastructural limitations, and inadequate government support (Bickton & Shannon, 2022; Chan et al., 2021). Facilitators such as formal training, strong stakeholder collaboration, accessible venues, and family and community support have been identified as critical to successful CBPR establishment (Pascoe & Buchan, 2024; Ly et al., 2022).

In the Philippine context, there is a notable scarcity of CBPR programs, with only one non-hospital-based PR center in Baguio City and none that are truly community-based, highlighting a significant service gap. This gap is particularly pressing given the rising burden of COPD and the need for scalable, sustainable interventions that can be integrated into local health systems. Addressing the barriers and leveraging the facilitators to CBPR implementation is therefore both timely and essential for improving COPD management and patient outcomes in Baguio City and similar settings (Labaki & Han, 2020; Nici et al., 2019; Bickton & Shannon, 2022).

This study aims to fill this research gap by systematically identifying the barriers and facilitators to establishing a CBPR program in Baguio City from the perspectives of respiratory therapists and pulmonologists. By focusing on personal, socio-economic, environmental, and program mechanism dimensions, the study seeks to inform local policy, practice, and future research on effective strategies for CBPR implementation.

Research Questions

1. What are the barriers to establishing a community-based pulmonary rehabilitation program in Baguio City considering the following dimensions
 - 1.1 Personal;
 - 1.2 Socio-economic;
 - 1.3 Environmental; and
 - 1.4 Program mechanisms?
2. What are the facilitators that will enable the establishment of a community-based pulmonary rehabilitation program in Baguio City considering the same dimensions
 - 2.1 Personal;
 - 2.2 Socio-economic;
 - 2.3 Environmental; and
 - 2.4 Program mechanisms?
3. Is there a significant difference in the identified barriers and facilitators between respiratory therapists and pulmonologists based on
 - 3.1 Age;
 - 3.2 Years of experience; and
 - 3.3 Position?
4. What is the best design for pulmonary rehabilitation to be delivered at the community level?

METHODOLOGY

Study Locale

The research was conducted in Baguio City, a major urban center in the northern Philippines. The specific names of institutions involved were withheld to maintain confidentiality, as explicit permission for disclosure was not obtained.

Sampling Method

A purposive sampling technique was employed to select participants for the study. The target population comprised healthcare professionals directly involved in pulmonary care, specifically respiratory therapists and pulmonologists practicing within Baguio City. Inclusion criteria required participants to be currently practicing in the locale, able to understand English or Filipino, and willing to provide informed consent.

Respondent Demographics

The study sample consisted of respiratory therapists and pulmonologists. Demographic data collected included age, professional position, and years of service. These variables were used to analyze potential differences in perceptions of barriers and facilitators to community-based pulmonary rehabilitation (CBPR) program establishment. Detailed demographic breakdowns are available in the Results section.

Data Gathering Procedure

Data were collected using a self-administered online survey distributed via Google Forms. An informed consent statement was presented at the beginning of the survey, ensuring voluntary participation and the right to withdraw at any time. The survey link was disseminated through professional networks and direct communication with eligible participants. Responses were collected over a defined period and downloaded for analysis upon completion of data collection.

Instrumentation

The primary data collection instrument was a researcher-developed questionnaire, structured in three parts:

1. Eligibility Screening: Ensured respondents met inclusion criteria.
2. Demographic Profile: Captured age, position, and years of service.
3. Barriers and Facilitators Assessment: Comprised items evaluating perceived barriers and facilitators to CBPR establishment across four dimensions: personal, socio-economic, environmental, and program mechanisms.

The assessment section utilized a Likert-type scale to rate agreement with each item. The questionnaire underwent expert validation and was pilot-tested among healthcare professionals in a neighboring province, resulting in a Cronbach's alpha of 0.867, indicating good internal consistency and reliability.

Data Analysis

Quantitative data were analyzed using descriptive and inferential statistics. Demographic variables were summarized using percentage distributions. Perceptions of barriers and facilitators were analyzed using frequency counts and weighted means. To determine significant differences in responses based on age, position, and years of service, the Kruskal–Wallis test—a nonparametric statistical method suitable for small sample sizes and non-normally distributed data—was employed.

Scope and Limitations

The study focused exclusively on the perspectives of respiratory therapists and pulmonologists in Baguio City, limiting generalizability to other healthcare professionals or regions. The use of an online survey may have restricted participation to those with internet access and may not have captured nuanced qualitative insights. Time constraints and the ongoing demands on healthcare workers further limited the sample size and scope of inquiry. The study did not include patient or community member perspectives, which are recommended for future research.

RESULTS

This section presents the findings of the study on the barriers and facilitators in establishing a community-based pulmonary rehabilitation (CBPR) program in Baguio City, as perceived by respiratory therapists and pulmonologists. Quantitative data are summarized in consecutively numbered tables, each with a descriptive title and appropriate academic formatting.

1. Demographic Profile of Respondents

Table 1. Demographic Profile of Respondents

Characteristic	Frequency (n)	Percentage (%)
Profession		
- Respiratory Therapist	12	60.0
- Pulmonologist	8	40.0
Age Group		
- 21–30 years	7	35.0
- 31–40 years	8	40.0
- 41–50 years	5	25.0
Years of Experience		
- 1–5 years	6	30.0
- 6–10 years	7	35.0
- >10 years	7	35.0
Position		
- Staff	13	65.0
- Supervisor/Head	7	35.0

2. Barriers to Establishing a CBPR Program

Table 2. Weighted Mean Scores of Barriers to CBPR Establishment by Dimension

Barrier Dimension	Weighted Mean (WM)
Personal	3.55
Socio-economic	3.45
Environmental	3.29
Program Mechanisms	3.59

Table 3. Top Five Specific Barriers to CBPR Establishment

Barrier Item	Weighted Mean (WM)
Inadequate government funding/support	3.74
Insufficient training of healthcare providers	3.66
Lack of community awareness about CBPR	3.64
Lack of knowledge about CBPR guidelines	3.59
Inadequate facilities and equipment	3.53

3. Facilitators to Establishing a CBPR Program

Table 4. Weighted Mean Scores of Facilitators to CBPR Establishment by Dimension

Facilitator Dimension	Weighted Mean (WM)
Personal	3.62
Socio-economic	3.63
Environmental	3.60
Program Mechanisms	3.66

Table 5. Top Five Specific Facilitators to CBPR Establishment

Facilitator Item	Weighted Mean (WM)
Public awareness of CBPR benefits	3.74
Adequately trained personnel	3.72
Positive group interactions among patients	3.72
Formal training for healthcare providers	3.65
Availability of educational materials and equipment	3.70

4. Differences in Barriers and Facilitators by Profession, Age, and Experience

Table 6. Significant Differences in Perceptions of Barriers and Facilitators

Variable/Dimension	p-value	Significant Difference
Environmental Barriers	0.041	Yes
Program Mechanism Barriers	0.048	Yes
Socio-economic Facilitators	0.039	Yes
Other Dimensions	>0.05	No

5. Preferred Design Elements for Community-Based Pulmonary Rehabilitation

Key Components for CBPR Program Design

- **Patient Assessment:** Dyspnea assessment, comorbidities evaluation, anxiety/depression screening, field exercise tests, quality of life, nutritional and occupational status, inhaler technique.
- **Exercise and Education:** Smoking cessation, endurance training, goal setting, maintenance exercises, self-management, structured education.

DISCUSSION

The results of this study identified key barriers and facilitators to establishing a community-based pulmonary rehabilitation (CBPR) program in Baguio City, as perceived by respiratory therapists and pulmonologists. The most prominent barriers included insufficient training, limited community awareness, financial constraints, inadequate facilities, and lack of government support. These findings are consistent with international literature, which highlights similar obstacles such as limited provider competence, resource scarcity, and structural inequities in both high- and low-to-middle-income countries (Bickton & Shannon, 2022; Chan et al., 2021). The high mean scores for program mechanism barriers and personal barriers underscore the critical need for workforce development and systemic support, echoing calls for clinician up-skilling and structured communication training found in recent systematic reviews.

Socio-economic barriers, particularly lack of community awareness and financial constraints, were also significant, aligning with previous studies that cite low health literacy, financial burden, and transportation challenges as major impediments to PR participation. Environmental barriers, such as inadequate venues and distant locations, further reflect the global challenge of limited infrastructure for community-based care.

Facilitators identified in this study—formal training, community and family support, accessible venues, and strong stakeholder collaboration—mirror facilitators reported in the literature, including trust in healthcare providers, accessible resources, and personalized care plans (Pascoe & Buchan, 2024; Ly et al., 2022). The high mean scores for program mechanism facilitators and personal facilitators reinforce the importance of system readiness and professional competence, as well as the value of social and family support in enhancing participation.

The lack of significant differences between respiratory therapists and pulmonologists in most dimensions suggests a shared recognition of the main challenges and enablers, though differences in perceptions of environmental and program mechanism barriers highlight the need for multidisciplinary perspectives in program design. This is consistent with the literature emphasizing the importance of context-tailored, multi-stakeholder approaches to PR implementation.

The study's identification of core CBPR program components—comprehensive patient assessment, exercise and education modules, and structured stakeholder collaboration—aligns with international guidelines and best practices for PR delivery. The findings also support the use of multi-dimensional intervention strategies, as recommended in recent reviews.

Overall, the results are consistent with previous studies, reinforcing the need for integrated, context-sensitive solutions to overcome barriers and leverage facilitators in CBPR implementation. The study's focus on the perspectives of healthcare providers in a low-resource urban setting adds valuable local insight to the global evidence base.

Conclusions

1. **Barriers to CBPR Establishment:** The primary barriers to establishing a community-based pulmonary rehabilitation program in Baguio City are insufficient provider training, limited community awareness, financial constraints, inadequate facilities, and lack of government support. These barriers span personal, socio-economic, environmental, and program mechanism dimensions.
2. **Facilitators to CBPR Establishment:** Key facilitators include formal training for providers, community and family support, accessible and well-equipped venues, and strong collaboration among stakeholders. These enablers are critical across all four dimensions assessed.
3. **Differences by Professional Group:** There are no significant differences in the overall perception of barriers and facilitators between respiratory therapists and pulmonologists, except in specific areas such as environmental barriers and socio-economic facilitators, reflecting their varied roles in PR implementation.
4. **Best Design for Community PR:** The optimal design for community-based PR includes comprehensive patient assessment (dyspnea, comorbidities, mental health, exercise capacity), structured exercise and education modules, and robust stakeholder collaboration, consistent with international best practices.

Recommendations

1. **Training and Capacity Building:** Health authorities should provide regular, comprehensive training for healthcare providers and community health workers on CBPR implementation, including basic monitoring skills and the use of improvised equipment.
2. **Awareness and Education Campaigns:** Health agencies and local government units should conduct sustained information and education campaigns to raise public awareness about COPD and the benefits of PR, addressing low health literacy and community engagement.

3. **Resource Mobilization and Policy Support:** Policymakers should develop funding policies, repurpose community venues for CBPR, and explore public-private partnerships to address financial and infrastructural barriers.
4. **Stakeholder Collaboration:** Strengthen collaboration among healthcare providers, community leaders, and policymakers in planning, implementing, and evaluating CBPR programs, ensuring multidisciplinary input and shared ownership.
5. **Future Research:** Further studies should include patient and community perspectives, evaluate the long-term effectiveness and cost-effectiveness of CBPR, and test integrated, multi-dimensional intervention strategies in diverse settings.
6. **Intervention Program:** Implement a pilot CBPR program based on the identified best design, with ongoing monitoring and evaluation to refine the model and inform scale-up.

Compliance with Ethical Standards

This study was conducted in full compliance with ethical standards. Informed consent was obtained from all participants, who were informed of their right to withdraw from the study at any time without penalty. Anonymity and data privacy were strictly maintained, with all responses kept confidential and securely stored. The well-being of respondents was safeguarded throughout the research process. The authors declare no conflict of interest in the conduct of this study. Plagiarism was strictly avoided, and all findings were interpreted without bias. The results are used solely for research purposes. AI tools were utilized for grammar checking and literature review, and this use is fully disclosed.

Acknowledgments

The researcher is a proud Igorota from the Mountain Province and the second of four siblings. A devoted wife and mother to three children. Holds a degree in Bachelor of Science in Respiratory Therapy from Pines City Colleges and a Bachelor of Science in Biology from Saint Louis University. The researcher ranked second in the first Respiratory Therapist Licensure Examination in 2013. Currently, the researcher serves as a faculty member at the College of Respiratory Therapy, Pines City Colleges, where the researcher has devoted nearly two decades of her professional career to teaching and mentoring future respiratory therapists. Prior to her academic appointment, the researcher played an instrumental role in the establishment of the Pulmonary Unit at Pines City Doctors' Hospital (PCDH), where she initially served as the sole Respiratory Therapist for almost two years. As the unit grew, she was appointed Chief Respiratory Therapist, a role she fulfilled for an additional three years before pursuing opportunities abroad. However, her deep-rooted commitment to service and education led her back to the Philippines, where she accepted a teaching position at her alma mater. The researcher is an advocate for the advancement of the respiratory therapy profession in the Philippines. As the current President of the Philippine Society of Respiratory Therapy Educators and the Auditor of the Association of Respiratory Care Practitioners of the Philippines, the Accredited and Integrated Professional Organization (AIPO) for Respiratory Therapists, she has initiated

and supported several key programs. These include the standardization of clinical internship program, advocacy for salary augmentation, and the development of continuing education initiatives for respiratory therapy educators, practitioners, and students.

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