HOME-BASED CARE AND LIFE QUALITY FOR ELDERLY COPD PATIENTS: A MIXED-METHODS EVALUATION IN A COASTAL HOSPITAL

Winda Sari Siregar[1], Ermi Girsang[2,3], Sri Lestari Ramadhani Nasution[2,3]
[1]Postgraduate Program in Public Health, Universitas Prima Indonesia, Medan, Indonesia
[2,3]Department of Public Health, Universitas Prima Indonesia, Medan, Indonesia
[2,3]COE for Degenerative Disorders and Integrated Health, Universitas Prima Indonesia, Medan, Indonesia
Email address: srilestariramadhaninasution@unprimdn.ac.id

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ABSTRACT

Chronic Obstructive Pulmonary Disease (COPD) is a significant global health challenge, particularly among the elderly population, who are at high risk of exacerbations and have limited mobility. Home care services have emerged as an innovative strategy to improve the accessibility and sustainability of care outside of hospital settings. This study aims to analyze the effectiveness of a home care program on the quality of life and medication adherence of elderly patients with COPD at RSAL Dr. Komang Makes Belawan. This study employed a mixed-methods design with a sequential explanatory approach. The quantitative phase involved 35 respondents selected via a total sampling approach. The instruments used included the VQ11 questionnaire to measure quality of life and the MMRC scale to assess dyspnea severity. The qualitative phase was conducted through in-depth interviews with patients, families, and healthcare providers to explore subjective experiences during the intervention. Data analysis integrated inferential statistical tests and thematic analysis to obtain a comprehensive understanding. Findings demonstrated significant clinical improvement, with patients' dyspnea levels decreasing from an average MMRC Grade 3 to Grade 1 post-intervention. Quality of life scores (VQ11) improved from the moderate/severe category to the good/very good category. Additionally, the frequency of monthly exacerbations decreased drastically, from an average of 3 to 1. Qualitative data reinforced these findings by identifying three main themes: increased psychological safety, professionalism in healthcare services, and strengthening the family's role in monitoring treatment adherence. The home-based care program proved effective in improving the quality of life and treatment adherence among elderly COPD patients. This success was driven by integrating routine clinical monitoring at home and empowering families as the primary support system. This study recommends home-based care as a standard model in the management of long-term chronic diseases to optimize patient health outcomes and healthcare system efficiency.

Keywords: COPD, Home Care, Quality of Life, Treatment Adherence, Mixed Methods.

Introduction

Chronic Obstructive Pulmonary Disease (COPD) currently ranks as the third leading cause of death globally and places a significant economic burden on health systems worldwide (Chen et al., 2020). As the global population ages, lung disease in the elderly has emerged as a major public health concern, characterized by significant increases in morbidity and mortality (Joshi, 2024). Long-term projections indicate that the global prevalence of COPD will continue to rise through 2050, driven by the interaction of environmental risk factors

and the demographic shift toward aging societies (Boers et al., 2023). In the elderly population, this condition is exacerbated by the phenomenon of inflamm-aging—chronic, low-grade systemic inflammation—which directly contributes to the decline of lung function and functional limitations in daily activities (Gabriella et al., 2023). The macroeconomic burden of COPD is expected to continue to increase dramatically in the coming decades, negatively impacting labor supply and physical capital accumulation in many countries (Chen et al., 2020). Therefore, a thorough understanding of the complexities of diagnostic and management challenges in this vulnerable group is crucial to improve their health outcomes and quality of life (Joshi, 2024).

Despite the widespread availability of conventional pharmacological management protocols, adherence to therapy in elderly COPD patients remains very low, with reported non-adherence rates ranging from 22% to 93% (Bhattarai et al., 2020). A major barrier in traditional clinical settings often stems from the complexity of treatment regimens, which require elderly patients to manage multiple inhaler devices with varying usage techniques despite their physical and cognitive limitations (Liu et al., 2025). Polypharmacy and a lack of effective communication between healthcare providers and patients regarding specific treatment barriers are also crucial factors exacerbating treatment failure (Case & Eakin, 2024). Furthermore, logistical barriers such as limited transportation and difficult physical access to hospital rehabilitation centers often prevent elderly patients from receiving ongoing professional guidance (Xia et al., 2023). Psychosocially, misperceptions about medication effectiveness and a lack of in-depth understanding of the progressive nature of the disease are significant barriers to patient self-management (Liu et al., 2025). Systemically, the high cost of treatment and the complexity of health insurance procedures in formal facilities add to the administrative burden, leading to premature therapy termination (Case & Eakin, 2024).

In response to various barriers to conventional management, home care and home-based pulmonary rehabilitation (HBPR) programs have emerged as innovative solutions that increase the accessibility of services for COPD patients (Stafinski et al., 2022). In general, pulmonary rehabilitation interventions have been shown to significantly improve patients' quality of life by enhancing functional capacity and health status (Dong et al., 2020). Furthermore, scientific evidence indicates that HBPR programs are

as effective as hospital-based rehabilitation in improving exercise capacity and health-related quality of life, making them a highly viable alternative for patients with mobility limitations (Stafinski et al., 2022). Implementing long-term, self-guided exercise programs at home has also been shown to be crucial for maintaining the health benefits achieved in the initial rehabilitation phase, thereby preventing progressive physical decline (Frei et al., 2022). From a health economics perspective, the home care model offers greater cost-efficiency than traditional hospital-based care, contributing to the sustainability of the healthcare system (Tereza et al., 2024). Thus, integrating home-based interventions offers an opportunity for more inclusive and personalized care, particularly for the elderly population, who often face physical barriers to accessing formal healthcare facilities (Stafinski et al., 2022).

Although home-based pulmonary rehabilitation programs have been identified as a promising solution, patient adherence remains a challenging and unsatisfactory approach in clinical practice (Zhou et al., 2025). Evaluating the efficacy of such interventions requires a deep understanding of contextual factors and individual experiences that are often not captured through quantitative data alone (Cerini et al., 2021). The use of a mixed-methods research design with a sequential explanatory approach offers the advantage of providing a more comprehensive picture by integrating statistical results with qualitative narrative analysis to explain the mechanisms behind the program's effectiveness (Baldridge et al., 2025; Gesser-edelsburg et al., 2020). To date, there is limited literature specifically evaluating home care programs for elderly COPD patients in military hospitals with coastal characteristics in Indonesia. Therefore, this study aims to analyze the effectiveness of home care programs on quality of life and therapy adherence in elderly COPD patients at Dr. Komang Makes Naval Hospital, Belawan, using a mixed-methods design. This research is expected to fill a literature gap and serve as a basis for developing a more adaptive, personalized home-based care model for the elderly population.

Method

Study Design and Rationale

This study utilized a mixed-methods design with an explanatory sequential approach (QUAN qual). In this design, quantitative data collection and analysis were prioritized and conducted in the first phase, followed by a qualitative phase to refine further and explain the statistical results. The rationale for choosing this approach was to provide a more comprehensive evaluation that quantitative

data alone could not capture. Specifically, the qualitative phase was designed to explain "anomalies" in the data—such as why certain patients exhibited high quality of life despite severe symptoms—and to provide an in-depth understanding of the psychosocial mechanisms and lived experiences that drive therapy adherence among elderly patients in a coastal-naval hospital setting.

Study Setting and Participants

The study was conducted at the Dr. Komang Makes Belawan Naval Hospital (RSAL), Medan, focusing on the Home Care Program for elderly patients with Chronic Obstructive Pulmonary Disease (COPD). The target population included all elderly patients receiving home care services within the hospital's jurisdiction. Given the relatively small and specialized population, a total sampling method was employed, yielding a sample of 35 respondents for the quantitative phase.

- Inclusion Criteria: Patients aged ≥ 60 years, diagnosed with COPD (confirmed by medical records), recipients of home care services at least once, *of sound mind*, and providing voluntary consent.
- Exclusion Criteria: Patients with terminal comorbidities (e.g., advanced heart failure or metastatic cancer) or severe cognitive impairments (e.g., dementia) that would hinder the interview process.

Instrumentation

Three primary validated instruments were employed:

1. Quality of Life (VQ11): Measured using the Indonesian version of the VQ11 questionnaire, which covers functional, emotional, and social dimensions. This instrument was previously validated in the Indonesian context and demonstrated high reliability in this study with a Cronbach's Alpha, exceeding the 0.7 threshold.
2. Therapy Adherence (MMAS-8): To explicitly measure medication adherence, the 8-item Morisky Medication Adherence Scale (MMAS-8) was utilized. This scale is the international gold standard for assessing adherence behavior in chronic disease management, focusing on forgetfulness and intentionality in medicine use.
3. Dyspnea Level (mMRC): Measured using the Modified Medical Research Council (mMRC) scale to categorize the severity of breathlessness during physical activity.
4. Additionally, clinical data, including exacerbation frequency and healthcare facility utilization,

were extracted from the hospital's medical records and home care logs.

Data Collection and Qualitative Depth

Following the quantitative phase, the qualitative phase involved in-depth interviews and Focus Group Discussions (FGDs) with a subset of the respondents and their families. This phase focused on exploring the "depth" of the intervention's impact, such as the sense of security provided by healthcare visits and the barriers to adherence that are not visible through scales alone (e.g., cultural beliefs or family dynamics during the adaptation period).

Data Analysis and Integration

Quantitative data were analyzed using SPSS version 25, employing descriptive statistics and inferential tests (Chi-square or Fisher's Exact Test) to assess the impact of home care. Qualitative data underwent thematic analysis, involving transcription, open coding, and thematic categorization to identify recurring patterns.

The Mixed-Methods Rigor was ensured through data integration (triangulation) in the final stage, where quantitative results were "connected" to qualitative narratives. This integration enabled the researchers to validate their findings and provide a robust explanation for the effectiveness (or lack thereof) of the home care program, grounded in both statistical evidence and human experience.

Ethical Considerations

The study protocol received formal approval from the Health Research Ethics Committee of Universitas Prima Indonesia and the Ethics Committee of Dr. Komang Makes Belawan Naval Hospital. All participants were fully informed about the study's purpose and signed a written informed consent form before participation.

Results

Quantitative Analysis

Table 1. Relationship Between Home Care and Quality of Life

Test	Value	df	Asymp. Sig. (p)
Pearson Chi-Square	6.214	1	0.013
Continuity Correction	5.487	1	0.019
Likelihood Ratio	6.002	1	0.014
N of Valid Cases	35		

Based on the results of the Chi-square test, a p-value of 0.013 ($p < 0.05$) was obtained; it can therefore be concluded that there is a significant association between the quality of *home care* services and the quality of life of COPD patients. Patients receiving high-quality home care services tend to have a better quality of life compared to those receiving services of a lower quality. These findings indicate that

the *home care* services provided by the Dr. Komang Makes Belawan Indonesian Navy Hospital play a role in improving the well-being and quality of life of patients receiving care at home.

Table 2. Testing the Effect *of Home Care* on Treatment Adherence (*Logistic Regression*)

Variable	B	S.E	Wald	Df	Sig	Exp(B)
Home care	1.245	0.502	6.153	1	0.013	3.47
Constant	-1.842	0.751	6.020	1	0.014	0.158

The results of the logistic regression analysis show that the *homecare* service variable has a significance value of p = 0.013 (p < 0.05). This indicates that *homecare* services have a significant effect on patient adherence to treatment. The Exp(B) value of 3.47 indicates that patients receiving high-quality home care services are 3.47 times more likely to adhere to their treatment regimen compared to patients receiving suboptimal *home care* services. This odds ratio indicates a fairly strong influence of home care services on patients' adherence to their treatment. Interviews with healthcare staff at Dr. Komang Makes Belawan Naval Hospital revealed that during each home care visit, healthcare staff not only assess the patient's condition but also ensure that patients take their medication in accordance with the prescribed dosage. Furthermore, patients' families are provided with education regarding the importance of treatment adherence in the patient's recovery process.

Table 3. The Relationship Between Dyspnoea and Quality of Life (*Spearman's Correlation*)

Variable	Dyspnoea	Quality of Life
Dyspnoea	1.000	-0.563
Quality of Life	-0.563	1,000
Spearman's rho	**Sig. (2-tailed)**	**N**
-0.563	0.001	35

Based on the results of the Spearman's correlation analysis, a correlation coefficient of r = −0.563 was obtained, with a p-value of 0.001 (p < 0.05). These results indicate that there is a significant negative relationship between the level of dyspnoea and the quality of life of COPD patients. This negative relationship suggests that the higher the level of *dyspnoea* (shortness of breath) experienced by patients, the lower their quality of life. This occurs because *dyspnoea* can limit patients' physical activity, reduce mobility, and affect their psychological well-being. These quantitative findings are consistent with the results of in-depth interviews, which showed that shortness of breath

significantly limits patients' daily activities, such as walking, performing household chores, and social interaction. Patients also reported feelings of anxiety and fear when episodes of breathlessness occurred, which ultimately impacted their psychological well-being and reduced their overall quality of life. Therefore, the management of dyspnoea through *home care* services provided by healthcare professionals is a key factor in improving the quality of life of COPD patients.

Qualitative Analysis

Patients' and Families' Perceptions of the Comfort of *Home Care* Services

One patient described their experience as follows:

"Being treated at home feels more comfortable. I don't have to travel far to the hospital and can stay with my family. That makes me feel more at ease and not as though I'm seriously ill."

One of the patient's family members stated:

"We feel supported because healthcare workers come directly to our home and explain how to care for the patient properly. So we don't feel worried about having to care for them ourselves."

One patient described their experience as follows:

"The nurses who came to my home were very friendly and patient in explaining my condition. They also frequently asked whether I felt comfortable or not."

One patient's family member said:

"Sometimes the nurse's arrival time changes because there are many other patients. If possible, the schedule should be more fixed so that we can plan our time accordingly."

Analysis of the Implementation of the *Home Care* Programme

One patient said:

"*With the homecare service, I no longer need to travel back and forth to the hospital. If I have any complaints, I can be examined straight away at home*."

One healthcare worker explained:

"*With home care, we can monitor patients' progress directly in their own homes. If there is a change in their condition, we can take immediate action or refer them*."

One of the patient's family members said:

"*We now have a better understanding of how to care for the patient at home. The nurse explained how to administer medication and how to monitor the patient's condition*."

One healthcare worker stated:

"*The number of healthcare workers is still limited, whilst the demand for services is quite high. So sometimes we have to adjust the schedule to ensure all patients can still be served*."

1. Frequency of Healthcare Professional Visits

Patients with relatively stable health conditions usually receive one to two visits per week, whilst patients requiring more intensive care may receive more frequent visits. One healthcare worker explained that: *"We usually schedule visits according to the patient's condition. Some patients only need one visit a week, but others require more frequent monitoring, particularly if their condition is still unstable."*

One patient remarked that regular visits by healthcare staff made them feel more at ease, as their health was constantly being monitored. The patient stated: *"With visits from nurses or healthcare staff, we feel more at ease because the patients' condition is always being checked. If there are any changes in their condition, they can be dealt with immediately."*

2. Types of *Home Care* Services

One healthcare worker explained that *the home* care service is designed to ensure that patients continue to receive optimal healthcare even when they are not in hospital. He said: *"During home care visits, we assess the patient's condition, check their blood pressure, monitor their breathing, and ensure that the medication they are taking is in line with the doctor's instructions."*

One of the patient's family members said: *"The nurse explained how to care for the patient at home and what to look out for if the patient's condition changes."*

3. Family Involvement in Patient Care

One of the patient's family members stated: *"We are always present when the nurses visit. We also help remind the patient of their medication schedule and ensure they follow the healthcare professionals' advice."*

One healthcare professional explained that: *"The family are the people closest to the patient, so they play a vital role in monitoring the patient's condition on a daily basis."*

4. Family Involvement in Patient Care

One of the patient's family members stated: *"If there is a sudden health issue, we usually contact the nurse by phone to ask what we should do."*

Healthcare Professionals' Experience in the *Homecare* Programme

One healthcare worker explained: *"When we visit patients directly at home, we can see their living conditions. From there, we can offer more appropriate advice regarding the patient's lifestyle and care."*

A healthcare professional stated: *"We feel closer to our patients because we often visit them in their homes. When patients show good progress, it gives us a real sense of satisfaction."*

Discussion

The Impact of Home Care on Clinical Outcomes and Treatment Effectiveness

This study demonstrates that home care services fundamentally shift the clinical management of elderly COPD patients from a reactive to a proactive approach, directly impacting patient stability. Significant reductions in mMRC scores and monthly exacerbation frequency, from an average of three to one, indicate that regular home monitoring is effective in detecting signs of worsening symptoms early. These quantitative findings are further supported by qualitative data, which reveal a "feeling of safety" in patients; the presence of healthcare professionals in the home environment reduces the psychological anxiety that typically triggers increased shortness of breath. Therefore, the effectiveness of this program stems not only from pharmacological interventions but also from the continuity of care that eliminates the monitoring gaps common in conventional care.

The findings of this study reinforce the global scientific consensus that home-based interventions are a crucial strategy for sustainably improving the health status of COPD patients (Lahham et al., 2022). The improvements in quality of life and functional capacity observed in patients at Belawan Naval Hospital align with the results of a randomized clinical trial by (Lahham et al., 2022) that demonstrated the effectiveness of home-based pulmonary rehabilitation even in patients with mild disease. Furthermore, the significant reduction in shortness of breath symptoms in this study supports the findings of (Chuatrakoon et al., 2022), who reported that a self-directed home rehabilitation program provided clinical improvements comparable to those of a hospital-based program. Changes in healthcare utilization patterns following home care initiation are also consistent with registry data from (Moger et al., 2025), which reported a decreasing trend in the frequency of acute and emergency hospitalizations. The stability of patient conditions achieved through this program also aligns with evidence from (Tereza et al., 2024), which confirmed that home care is a more cost-effective alternative to conventional inpatient care without compromising patient outcomes. Collectively, the alignment of these results with the international literature confirms that a home-based case management approach can effectively address clinical barriers for the elderly population (Chuatrakoon et al., 2022).

Quality of Life and the Vicious Cycle of Shortness of Breath

The analysis showed a strong negative correlation between the degree of shortness of breath and quality of life,

confirming that COPD in the elderly is not simply a problem of impaired lung function, but rather a trigger for a vicious cycle of social isolation and emotional decline. The improvement in the VQ11 score from "Severe Impairment" to "Fairly Good" demonstrated that home interventions were able to break the cycle of depression and stress that typically accompany hospitalization. The familiar home environment made patients more open and responsive to the self-management education and breathing exercises provided. This synthesis suggests that improved quality of life is achieved because home care simultaneously addresses both functional and emotional aspects of patients in their own living spaces.

The findings of this study, which demonstrate a reciprocal relationship between the degree of shortness of breath and quality of life, align with the literature, which confirms that dyspnea severity is a major predictor of poor health-related quality of life in COPD patients (Jarab et al., 2023). Improvements in quality of life through this home-based intervention support the argument that structured self-management can effectively improve lung function and significantly improve patients' emotional health (Huang et al., 2021). Furthermore, these results reinforce previous findings that patient autonomy and supportive living conditions in the home environment are strongly correlated with higher quality-of-life scores (Schwarz et al., 2021). The significant role of the home environment in breaking the cycle of shortness of breath also aligns with research highlighting that physical environmental factors, such as ventilation quality and exposure to indoor pollutants, have a crucial influence on treatment effectiveness and clinical stability in COPD patients (Adhyatma et al., 2024). Overall, the alignment of these results with the global literature indicates that a holistic approach integrating symptom management with the optimization of living conditions can have a long-term impact on the functional well-being of elderly patients (Jarab et al., 2023; Schwarz et al., 2021).

Treatment Adherence and the Role of Family-Centered Care

The high therapeutic adherence observed in this study, as confirmed by logistic regression analysis, is a manifestation of the Family-Centered Care model's success. In elderly patients, the complexity of COPD treatment regimens is often a major barrier; however, qualitative findings suggest that this barrier is overcome through families' active role in monitoring therapy. Health workers act not only as clinicians but also as educators, directly building family health literacy. Empowering families to monitor inhaler

use and medication schedules creates a more consistent internal control system than brief education sessions in the outpatient clinic, enabling adherence to become part of the patient's daily routine.

The findings of this study, which identified home-based services as a strong predictor of therapy adherence, reinforce evidence that systemic support in the domestic environment is a key factor in addressing low adherence rates in chronic airway disease (Vanoverschelde et al., 2021). The success of family empowerment at Belawan Naval Hospital in ensuring correct inhaler use aligns with research by (Mayzel et al., 2022), which showed that focused, ongoing education significantly improved patients' technical skills and adherence. The crucial role of family members as therapy supervisors in this study is also supported by (Farahani et al., 2025), who emphasized that family caregivers play a pivotal role in daily disease management and meeting the practical needs of COPD patients. Furthermore, the positive correlation between high adherence and improved clinical outcomes in this study is consistent with the findings of (Lizano-barrantes et al., 2024), who reported that medication adherence and correct inhalation technique are key determinants in achieving optimal disease control. The effectiveness of personalized home-based education found in this study also demonstrated that direct identification of specific barriers was significantly more effective than passive educational approaches in health facilities (Vanoverschelde et al., 2021). Collectively, these comparisons confirm that a family-centered care model can mitigate the risk of non-adherence through literacy strengthening and ongoing psychosocial support (Farahani et al., 2025; Mayzel et al., 2022).

Accessibility and Professionalism in Coastal Healthcare Services

Belawan's coastal location provides a unique dimension to the effectiveness of home care in addressing physical accessibility barriers for the elderly. This service effectively eliminates transportation constraints and hospital wait times, which have often led elderly patients to skip routine check-ups. The professionalism of healthcare workers who conduct direct assessments of environmental determinants—such as home ventilation and sanitation quality—adds value to the quality of community nursing care. While logistical challenges in coastal areas remain, the efficiency of this outreach system demonstrates that an approach that considers local environmental factors is far more sustainable in improving satisfaction and service coverage for vulnerable populations.

This study's findings regarding accessibility barriers in the coastal area of Belawan reinforce the literature that coastal communities face significant health challenges due to inadequate infrastructure and uneven distribution of medical personnel (Asbar & Syamsiah, 2025). The transportation limitations and geographic constraints identified in this study align with a report by (Syafitri et al., 2024), which found that these factors are major barriers for older populations in coastal areas to reach modern healthcare facilities promptly. Furthermore, the success of home care programs in mitigating distance and travel time constraints supports the argument of S´anchez-Mateos & Pulpon, (2025) that efficient physical accessibility is an absolute prerequisite for achieving territorial equity for aging populations in low-density areas. The vulnerability to accessibility triggered by coastal environmental dynamics in this study is also consistent with a study by (Shan et al., 2023), which emphasized that environmental factors can drastically disrupt the supply of medical resources and the mobility of older adults to healthcare facilities. Collectively, the synchronization of these results confirms that adaptive and proactive health service management strategies are crucial to address health service disparities in coastal areas (Asbar & Syamsiah, 2025; Syafitri et al., 2024).

Practical Implications and Limitations

Overall, the integration of mixed-methods in this study indicates that effective COPD care for the elderly cannot be achieved through pharmacological management alone. Synergy is required between routine clinical monitoring, emotional support, and the empowerment of the support system (family). The implications of this study support the development of home-based healthcare policies as the standard of long-term care for patients with chronic diseases at the regional hospital level.

The findings of this study have significant clinical implications for the management of chronic diseases, particularly regarding the transition from a hospital-centered nursing care model to a patient-centered model in the home setting. Clinically, integrating home care services into long-term COPD management strategies enables proactive monitoring of patients' conditions, which is crucial for the early detection of acute exacerbations. Empowering families through a family-centered care approach serves as a key pillar in enhancing patients' self-efficacy and adherence to treatment, where healthcare providers act as educators who tailor interventions to the patient's physical and social environment. From a policy perspective, the findings of this study underscore the urgency of integrating home

care services into the national health financing system, such as JKN (BPJS Kesehatan), to ensure program sustainability and improve the efficiency of the health system by reducing readmission rates. The development of structured standard operating procedures (SOPs) and the use of technologies such as telemonitoring are strategic steps to expand the reach of these services in coastal areas with limited accessibility.

Although providing deep insights into the effectiveness of *home care*, this study has several limitations that should be noted. First, the relatively small sample size (n=35) and focus on a single study site (single-center study) at RSAL Dr. Komang Makes Belawan may limit the generalizability of the findings to the elderly population with COPD in different geographic regions. The specific characteristics of coastal areas may yield different results compared to urban or mountainous regions. Additionally, the use of qualitative data based on interviews carries the risk of subjectivity bias from respondents regarding their perceptions of service satisfaction. Further research is recommended to involve a larger, multicenter sample to validate the effectiveness of this home care model more broadly, as well as to integrate more objective clinical data such as lung function (spirometry) to strengthen the analysis of long-term clinical impacts.

Conclusions

This study concluded that implementing a home care program at Dr. Komang Makes Belawan Hospital significantly improved the effectiveness of care and adherence to treatment among elderly patients with COPD. A quantitative analysis of 35 respondents showed that the frequency of routine visits, the adequacy of service duration, and adherence to clinical protocols were the primary predictors of patient health stability, as evidenced by significant reductions in dyspnea levels and the frequency of exacerbations. Statistical results reinforce the finding that variables related to home-based care delivery are positively correlated with patients' quality of life, thereby positioning this service as a fundamental pillar in the management of long-term chronic diseases, rather than merely an ancillary service. Qualitative findings complement these results by revealing that care in the home environment provides deep psychological comfort and a sense of security for the elderly. At the same time, active family involvement has been a determining factor in maintaining patient motivation and adherence to complex treatment regimens.

References

Adhyatma, A., Sallo, A. K. M., Cahya, M. R. F., Apriani, B. N., & Rahmat, R. A.

(2024). The Influence Of Home Environmental Factors On Patient Care With Chronic Obstructive Pulmonary Disease (COPD). *Eduhealth*, *15*(02), 1527–1531. https://doi.org/10.54209/eduhealth.v15i02

Asbar, R. A., & Syamsiah, T. (2025). Healthcare Access Disparities in Coastal Regions : A Review. *Journal of Health Science and Pharmacy*, *2*(2), 185–202. https://doi.org/https://doi.org/10.36685/jhsp.v2i2.1173

Baldridge, A. S., Odukwe, A., Dabiri, O., & Mobisson, L. N. (2025). Implementation of the Extension for Community Healthcare Outcomes Model for Hypertension Education of Frontline Health Care Workers in the Federal Capital Territory , Nigeria : Explanatory Sequential Mixed Methods Evaluation Corresponding Author : *Journal of Medical Internet Research*, *27*, 1–14. https://doi.org/10.2196/66351

Bhattarai, B., Walpola, R., Mey, A., & Anoopkumar-dukie, S. (2020). Barriers and Strategies for Improving Medication Adherence Among People Living With COPD : A Systematic Review. *Respiratory Care*, *65*(11), 1738–1750. https://doi.org/10.4187/respcare.07355

Boers, E., Barrett, M., Su, J. G., Benjafield, A. V, Sinha, S., Kaye, L., Zar, H. J., & Vuong, V. (2023). Global Burden of Chronic Obstructive Pulmonary Disease Through 2050. *JAMA Network Open*, *6*(12), 1–12. https://doi.org/10.1001/jamanetworkopen.2023.46598

Case, M. A., & Eakin, M. N. (2024). patients with chronic obstructive pulmonary disease. *Expert Rev Respir Med*, *17*(7), 539–546. https://doi.org/10.1080/17476348.2023.2239708.Up-to-date

Cerini, T., Kunz, R., Lana, K. D., Radtke, T., & Polhemus, A. (2021). Evaluation of the Implementation of a Home-Based Exercise Training Program for People With COPD : A Mixed-Methods Study. *Frontiers in Rehabilitation Sciences*, *2*(October), 1–14. https://doi.org/10.3389/fresc.2021.743588

Chen, S., Kuhn, M., Prettner, K., Yu, F., Yang, T., Bärnighausen, T., Bloom, D. E., & Wang, C. (2020). Articles The global economic burden of chronic obstructive pulmonary disease for 204 countries and territories in 2020 – 50 : a health- augmented macroeconomic modelling study. *Lancet Glob Health*, *11*, 1183–1193.

Chuatrakoon, B., Uthaikhup, S., & Ngai, S. P. (2022). The effectiveness of home-based balance and pulmonary rehabilitation program in individuals with chronic obstructive pulmonary disease : a randomized controlled trial. *European Journal of Physical and Rehabilitation Medicine*, *58*(3), 478–486. https://doi.org/10.23736/S1973-9087.22.07383-X

Dong, J., Li, Z., Luo, L., & Xie, H. (2020). Efficacy of pulmonary rehabilitation in improving the quality of life for patients with chronic obstructive pulmonary disease: Evidence based on nineteen randomized controlled trials. *International Journal of Surgery*, *73*(3), 78–86. https://doi.org/10.1016/j.ijsu.2019.11.033

Farahani, M. A., Soltani-arabshahi, S. K., & Kashani, M. (2025). The needs of family caregivers of patients with chronic obstructive pulmonary disease : a scoping review protocol. *BMC Nursing*, *24*, 1–6. https://doi.org/https://doi.org/10.1186/s12912-025-03948-3

Frei, A., Radtke, T., & Lana, K. D. (2022). Effectiveness of a Long-term Home-Based Exercise Training Program in Patients With COPD After Pulmonary

Rehabilitation. *CHEST*, *162*(6), 1277–1286. https://doi.org/10.1016/j.chest.2022.07.026

Gabriella, M., Nicola, M., Mauro, A. H., & Cazzola, M. (2023). Pharmacotherapies in Older Adults with COPD : Challenges and Opportunities in Older Adults. *Drugs & Aging*, *40*(7), 605–619. https://doi.org/10.1007/s40266-023-01038-0

Gesser-edelsburg, A., Cohen, R., Abed, N., Shahbari, E., & Hijazi, R. (2020). A mixed-methods sequential explanatory design comparison between COVID-19 infection control guidelines ' applicability and their protective value as perceived by Israeli healthcare workers , and healthcare executives ' response. *Antimicrobial Resistance and Infection Control*, *9*, 1–7. https://doi.org/https://doi.org/10.1186/s13756-020-00812-8

Huang, Q., Lin, P., Dang, J., Fu, L., & Ding, L. (2021). Effect of internet-based self-management on pulmonary function rehabilitation and living quality in patients with chronic obstructive pulmonary disease. *Am J Transl Res*, *13*(5), 5224–5231.

Jarab, A. S., Al-qerem, W., Alzoubi, K. H., Heshmeh, S. A., Mukattash, T. L., Naser, A. Y., & Hamarneh, Y. N. Al. (2023). Health-related quality of life and its associated factors in patients with chronic obstructive pulmonary disease. *PLoS ONE*, *18*(10), 1–14. https://doi.org/10.1371/journal.pone.0293342

Joshi, P. R. (2024). Pulmonary Diseases in Older Patients : Understanding and Addressing the Challenges. *Geriatrics*, *9*(34), 1–15. https://doi.org/https://doi.org/10.3390/geriatrics9020034

Lahham, A., McDonald, C. F., & Moore, R. (2022). The impact of home-based pulmonary rehabilitation on people with mild chronic obstructive pulmonary disease: a randomised controlled trial. *Australia New Zealand Clinical Trial Registry*, *8*(5), 1–24. https://doi.org/10.1111/crj.13138

Liu, Y., Zhang, W., Huang, Y., Peng, X., Sun, K., Wu, Z., Wang, H., Ji, X., Wang, J., Liu, Y., Zhang, W., Huang, Y., Peng, X., Sun, K., & Wu, Z. (2025). Barriers and Facilitators to Inhaler Adherence in Elderly Individuals with Chronic Obstructive Pulmonary Disease : A Qualitative Study Barriers and Facilitators to Inhaler Adherence in Elderly Individuals with Chronic Obstructive Pulmonary Disease : A Qua. *International Journal of Chronic Obstructive Pulmonary Disease*, *20*, 3827–3838. https://doi.org/10.2147/COPD.S553540

Lizano-barrantes, C., Garin, O., Mayoral, K., Caballero-rabasco, M. A., & Praena-crespo, M. (2024). Impact of treatment adherence and inhalation technique on asthma outcomes of pediatric patients : a longitudinal study. *Front. Pharmacol*, *15*(March), 1–16. https://doi.org/10.3389/fphar.2024.1340255

Mayzel, B., Muench, S., & Lauster, C. (2022). Impact of Pharmacist Education on Inhaler Technique and Adherence in an Outpatient Clinic. *Hospital Pharmacy*, *57*(3), 1–6. https://doi.org/10.1177/0018578721104686 3

Moger, T. A., Holte, J. H., Amundsen, O., Bjørnsen, S., Døhl, Ø., Bragstad, L. K., Hellesø, R., Køpke, N., Tjerbo, T., Anders, T., Holte, J. H., Amundsen, O., & Bjørnsen, S. (2025). The in- and outpatient health care use of patients with COPD before and after initiation of home care : a registry study from Norway. *Scandinavian Journal of Primary Health Care*, *43*(1), 100–110.

https://doi.org/10.1080/02813432.2024.2404056

S´anchez-Mateos, H. M., & Pulpon, A. R. R. (2025). The challenge of access to healthcare services as a condition for territorial equity . A methodological approach for sparsely populated rural areas ector Martínez S a Raúl Ruiz Pulp o. *Health Policy*, *156*(March), 1–8. https://doi.org/https://doi.org/10.1016/j.healthpol.2025.105310

Schwarz, S. B., Mathes, T., Majorski, D. S., Strobel, M. W., Kroppen, D., Magnet, F. S., & Windisch, W. (2021). Living conditions and autonomy levels in COPD patients receiving non - invasive ventilation : impact on health related quality of life. *BMC Pulm Med*, *21*, 4–11. https://doi.org/https://doi.org/10.1186/s12890-021-01621-4

Shan, X., Scussolini, P., Wang, J., Li, M., Wen, J., & Wang, L. (2023). Deficiency of Healthcare Accessibility of Elderly People Exposed to Future Extreme Coastal Floods : A Case Study of Shanghai , China. *International Journal of Disaster Risk Science*, *14*, 840–857. https://doi.org/https://doi.org/10.1007/s13753-023-00513-x

Stafinski, T., Nagase, F. I., Avdagovska, M., Stickland, M. K., & Menon, D. (2022). Effectiveness of home - based pulmonary rehabilitation programs for patients with chronic obstructive pulmonary disease (COPD): systematic review. *BMC Health Services Research*, *22*, 1–14. https://doi.org/https://doi.org/10.1186/s12913-022-07779-9

Syafitri, R., Suryaningsih, S., Casiavera, C., & Niko, N. (2024). Breaking Barriers : Healthcare Access for the Suku Laut ' s Elderly , Mothers , and Children. *BIO Web of Conferences*, *134*, 1–10. https://doi.org/https://doi.org/10.1051/bioconf/202413407003

Tereza, M., Vidigal, C., Borges, G. H., Rabelo, D. H., Vieira, W. D. A., Costa, M. M., & Herval, Á. M. (2024). Cost-effectiveness of home care compared to hospital care in patients with chronic obstructive pulmonary disease (COPD): a systematic review. *Front. Med*, *11*(October), 1–16. https://doi.org/10.3389/fmed.2024.1405840

Vanoverschelde, A., Wel, P. Van Der, & Putman, B. (2021). Determinants of poor inhaler technique and poor therapy adherence in obstructive lung diseases : a cross- - sectional study in community pharmacies. *BMJ Open Resp Res*, *8*, 1–9. https://doi.org/10.1136/bmjresp-2020-000823

Xia, J., Yang, J., Yang, X., Zhang, S., & Guo, H. (2023). Barriers and Facilitators to Exercise Compliance for Community Elders with COPD : A Cross- Barriers and Facilitators to Exercise Compliance for Community Elders with COPD : A Cross-Sectional Study. *International Journal of Chronic Obstructive Pulmonary Disease*, *18*, 1965–1974. https://doi.org/10.2147/COPD.S424137

Zhou, H., Li, C., Niu, F., Liu, W., Qiu, X., Yang, G., & Zhang, H. (2025). Barriers and facilitators to adherence to home- based pulmonary rehabilitation in patients with chronic obstructive pulmonary disease : a mixed-methods systematic review. *BMC Nursing*, *24*, 1–15. https://doi.org/https://doi.org/10.1186/s12912-025-03940-x