RESEARCH ARTICLE

Effects of a Clinical Nursing Practice Guideline for Dyspnea Self-Management on Self-Management Behavior, Quality of Life, and Emergency Department Visits among Older Adults with Chronic Obstructive Pulmonary Disease, Namon District, Kalasin Province

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Abstract

This two-group pretest–posttest quasi-experimental study aimed to develop a clinical nursing practice guideline for dyspnea self-management and to compare its effects on self-management behavior, quality of life, and emergency department (ED) visits among older adults with chronic obstructive pulmonary disease (COPD) in Namon District, Kalasin Province, from October 2025 to April 2026. Sixty-six older adults with COPD were purposively selected, matched by sex, age and disease severity, and allocated by sub-district to experimental and control groups (n=33 each); 61 (31 and 30, respectively) completed the study. The experimental group received the guideline plus usual care for 8 weeks; the control group received usual care. Instruments included the guideline, a dyspnea self-management behavior questionnaire, and the WHOQOL-BREF-THAI. Data were analyzed using descriptive statistics, paired and independent t-tests, chi-square test, and Fisher's exact test.

After the intervention, the experimental group had significantly higher dyspnea self-management behavior (78.45±6.31) and quality of life (101.22±8.40) scores than at baseline (t=19.80 and 11.32, p<0.001) and than the control group (mean differences 23.35, 95% CI 19.61 to 27.09, and 14.75, 95% CI 10.25 to 19.25; p<0.001). ED visits for dyspnea within 3 months were lower in the experimental group than in the control group (6.45% vs 30.00%; Fisher's exact p=0.022; RR 0.22, 95% CI 0.05 to 0.91). The guideline was associated with better self-management and quality of life and fewer ED visits; a randomized study is needed before wider implementation in primary care units and community networks.

Keywords: Quality of life, Older adults, Chronic obstructive pulmonary disease, Dyspnea, Clinical nursing practice guideline

Introduction

Chronic obstructive pulmonary disease (COPD) is a major global public health problem and the fourth leading cause of death worldwide, accounting for 3.5 million deaths in 2021, or approximately 5% of all deaths,[1] with about 213 million people affected globally.[2] Thailand has approximately 1.5 million COPD patients, or about 5% of the population aged 30 years and older.[3] Thailand has also become a complete aged society, with older adults accounting for 21.31% of the population (13,826,163 people as of 31 May 2025),[22] a figure projected to reach 20.5 million, or 32% of the total population, by 2040.[4] Age-related changes in the respiratory system, including reduced lung elasticity and restricted chest wall movement, make older adults with COPD prone to breathlessness, affecting their ability to perform daily activities and their quality of life.

According to the Health Data Center (HDC), Kalasin Province has 154,961 older adults (19.21%). Namon District has a population of 36,388, of whom 4,476 (12.30%) are older adults, with a life expectancy of 72.08 years (fiscal year 2025).[5] Although Namon Hospital operates a long-term care system in which care managers and caregivers conduct home visits, 60% of older adults with COPD still have uncontrolled symptoms (112 of 186 with mMRC ≥ 2 or CAT ≥ 10) and frequently visit the emergency department (ED) because they continue to smoke and cannot avoid triggers such as dust and air pollution. Moreover, the hospital's care pathway focuses mainly on physician-led treatment, and there is no systematic nursing practice guideline to help older adults manage dyspnea themselves at home.

COPD causes permanent airway narrowing, resulting in dyspnea, productive cough, and reduced ability to perform daily activities,[6] as well as psychosocial problems.[7] The Global Initiative for Chronic Obstructive Lung Disease (GOLD) 2026 report recommends education and self-management alongside pharmacological treatment,[8] and a Cochrane systematic review found that self-management programs improve quality of life and reduce respiratory-related hospital admissions, albeit with small effects (mean SGRQ reduction 2.86 points; OR 0.75, 95% CI 0.57 to 0.98).[9] Lorig and Holman's self-management concept emphasizes problem solving, decision making, and resource utilization.[10] In Thailand, self-management and health literacy programs have been developed for older adults with COPD,[11,12] and quality nursing care should be based on evidence-based clinical practice guidelines.[13,14] However, clinical nursing practice guidelines for dyspnea self-

management among older adults with COPD that are integrated with the long-term care system and network partners in rural community settings are still lacking.

The researcher therefore developed a clinical nursing practice guideline for dyspnea self-management among older adults with COPD, aligned with physicians' treatment guidelines, to relieve symptoms, prevent exacerbations, and promote quality of life. The findings will benefit Namon Hospital, sub-district health promoting hospitals (SHPHs), care managers, and caregivers in caring for older adults with COPD in the community, help reduce ED visits, and inform the future development of elderly care systems.

Objectives

1. To develop a clinical nursing practice guideline for dyspnea self-management among older adults with chronic obstructive pulmonary disease that is appropriate to the context of Namon District, Kalasin Province.
2. To evaluate the implementation of the guideline in caring for older adults with COPD in the community in collaboration with network partners, in terms of activity completeness and participant attendance.
3. To compare dyspnea self-management behavior, quality of life, and ED visits before and after use of the guideline and between the experimental and control groups, with dyspnea self-management behavior as the primary outcome.

Methods

This two-group pretest–posttest quasi-experimental study was conducted in communities of Namon District, Kalasin Province, from October 2025 to April 2026 in three phases. Phase 1 (October 2025) involved developing the guideline from a review of evidence (PubMed, CINAHL, Cochrane Library, ThaiJO, and TCI, 2015–2025; 148 records identified and 12 selected; levels of evidence graded according to the Joanna Briggs Institute (JBI) criteria[13] with AGREE II[16] as the framework), together with a focus group of 12 stakeholders using semi-structured questions, analyzed by content analysis. Phase 2 (November 2025–January 2026) involved participant selection, pretest measurement, and an 8-week trial of the guideline (1 December 2025–25 January 2026). Phase 3 (26 January–April 2026) involved a 3-month follow-up of ED visits. Details are as follows.

Population

Older adults aged 60 years and over who were diagnosed with COPD and treated at Namon Hospital in fiscal year 2025 (n=186). Of these, 98 were screened, 71 met the criteria, and 5 declined, leaving 66 participants from 4 sub-districts (2 sub-districts per group).

Sample

The sample size was calculated using G*Power (two-tailed independent t-test, effect size 0.80, significance level .05, power 0.80),[15] yielding 26 per group; the effect size was based on studies of self-management programs among older adults with COPD in Thailand.[11,12] After adding 20% for attrition, the sample comprised 33 per group (66 in total). Participants were purposively selected and matched by sex, age, and disease severity. The experimental group was drawn from Namon Sub-district and the control group from Yot Kaeng Sub-district, which have similar contexts and distances from the hospital, to prevent contamination (sub-districts were not randomized owing to staffing constraints). During the study, 5 participants withdrew or were lost to follow-up (experimental group, 2: relocation 1 and attendance below 80% 1; control group, 3: relocation 1 and unreachable 2), leaving 61 (31 experimental and 30 control), which still provided 0.80 power to detect an effect size of $d \geq 0.73$.

Inclusion Criteria

1) Aged 60 years or older; 2) diagnosed with COPD by a physician, with post-bronchodilator FEV1/FVC below 0.70, and clinically stable for at least 4 weeks; 3) GOLD severity grade 1–3; 4) residing in Namon District for at least 6 months; 5) able to communicate in Thai and having a caregiver or village health volunteer (VHV) nearby; and 6) willing to participate.

Exclusion Criteria

1) Respiratory failure or need for continuous home oxygen therapy (GOLD grade 4); 2) cognitive impairment or psychiatric disorders (screened with the MMSE-Thai 2002); and 3) severe comorbidities such as infectious pulmonary tuberculosis, lung cancer, or severe heart failure. Withdrawal criteria were a request to withdraw, relocation, death, or attendance below 80%. A supplementary intention-to-treat analysis (last observation carried forward) was performed.

Research Instruments

The instruments comprised 1) intervention instruments: the clinical nursing practice guideline, a dyspnea management handbook, a demonstration video, and a symptom diary, which were reviewed by 5 experts (S-CVI/Ave 0.92) and quality-appraised using AGREE II;[16] and 2) data collection instruments: 2.1) a demographic questionnaire; 2.2) a dyspnea self-management behavior

questionnaire developed by the researcher based on Lorig and Holman's concept,[10] comprising 20 items in 4 domains (dyspnea management, medication use and trigger avoidance, exercise and nutrition, and exacerbation management) rated on a 5-point scale, with total scores of 20–100 (20–46 = low, 47–73 = moderate, 74–100 = high), IOC of 0.80–1.00, and Cronbach's alpha of 0.86 (n=30) and 0.88 in the study sample; 2.3) the World Health Organization Quality of Life–BREF, Thai version (WHOQOL-BREF-THAI), 26 items, scores 26–130[17] (26–60 = poor, 61–95 = moderate, 96–130 = good), reliability 0.84; and 2.4) a record form for ED visits for dyspnea from Namon Hospital medical records (ICD-10 J44.0, J44.1, or R06.0), coded by staff blinded to group allocation.

Data Collection

The researcher and research assistants (2 trained registered nurses who did not deliver activities to the experimental group) explained the study objectives and obtained informed consent. Pretest measurements were taken in November 2025. The experimental group received the guideline at home and at the SHPH as shown in Table 1, together with usual care, with follow-up visits by caregivers and VHVs. The control group received usual care (medication and follow-up at the COPD clinic every 1–3 months, individual health education, and home visits under the long-term care plan). Posttest measurements were taken in week 8 (19–25 January 2026), and ED visits were followed up from medical records for 3 months. At the end of the study, the control group received the same handbook and advice as the experimental group.

Data Analysis

Data were analyzed using IBM SPSS Statistics version 29. Descriptive statistics included frequency, percentage, mean, and standard deviation. Within-group comparisons used the paired t-test, between-group comparisons used the independent t-test, and proportions of ED visits were compared using the chi-square test and Fisher's exact test, with risk ratios and 95% CIs reported. Data were normally distributed (Shapiro–Wilk $p>.05$), and homogeneity of variance was examined using Levene's test. The significance level was set at .05 (a Bonferroni-adjusted level of 0.017 was considered for the 3 primary outcomes), and ANCOVA adjusting for pretest scores was used to confirm the between-group comparisons.

Research Ethics

This study was approved by the Human Research Ethics Committee of the Kalasin Provincial Public Health Office before the focus group and the guideline trial began. Participants' rights were protected by explaining the objectives, procedures, benefits, and risks of the study, and written

informed consent was obtained before participation. All data were kept confidential and presented in aggregate, and participants could withdraw at any time without affecting their treatment.

Results

1. Development of the Clinical Nursing Practice Guideline for Dyspnea Self-Management (Objective 1)

1.1 Situation and problem analysis Sixty percent of older adults with COPD in Namon District had uncontrolled symptoms and frequently visited the ED because they continued to smoke and could not avoid triggers. A focus group of 12 multidisciplinary team members, care managers, and caregivers identified 4 additional problems: 1) lack of breathing skills to relieve breathlessness, 2) incorrect inhaler use, 3) no action plan for exacerbations, and 4) lack of continuous follow-up at home.

1.2 Guideline development and quality assessment The developed guideline comprised 6 components linked to the supporting evidence and expected outcomes, as shown in Figure 1. Five experts (2 senior registered nurses specializing in respiratory care, 1 internist, 1 nursing instructor, and 1 pharmacist) reviewed the guideline, yielding a CVI of 0.92. The AGREE II quality score from 4 appraisers was 86.40% (domain scores 80.21–91.67%). After a pilot with 5 older adults with COPD, the wording and materials were simplified before actual implementation.

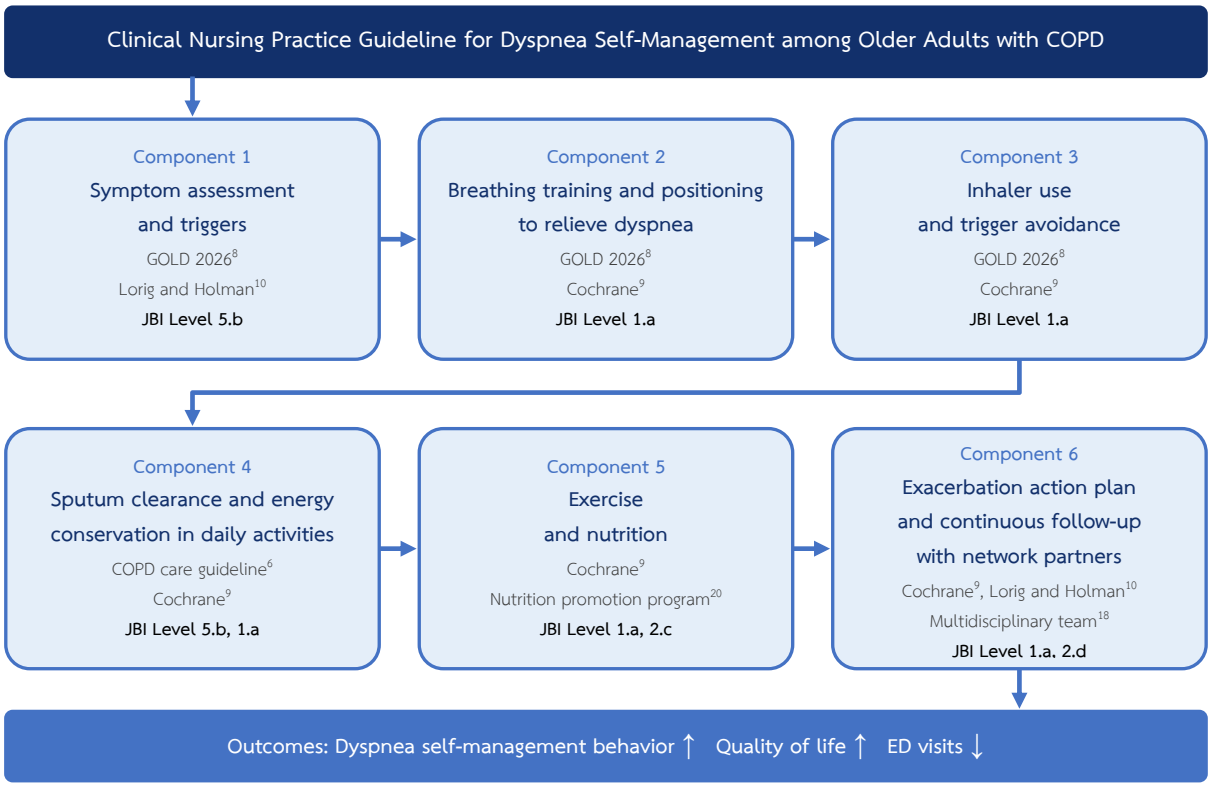

Figure 1 Components of the clinical nursing practice guideline, supporting evidence, and levels of evidence

Note: Levels of evidence were graded according to the JBI criteria;[13] these are approximate and should be verified against the original sources.

2. Implementation of the Guideline in Caring for Older Adults with COPD in the Community (Objective 2)

2.1 Guideline activities The experimental group received activities for 8 weeks, twice weekly, approximately 20 minutes per session (30 minutes in weeks 1 and 8; approximately 300 minutes in total), led by registered nurses at home (64.29%) or at the SHPH (35.71%) together with caregivers and VHVs. Mean attendance in the experimental group was 94.24% of 14 sessions (range 85.71–100%), and 25 of 31 participants (80.65%) attended all sessions, as shown in Table 1.

Table 1 Activities of the clinical nursing practice guideline for dyspnea self-management among older adults with chronic obstructive pulmonary disease over 8 weeks

Week	Activities/Content	Materials	Duration	Rationale
1	Assess dyspnea (modified Medical Research Council dyspnea scale: mMRC), oxygen saturation, triggers, and smoking; provide COPD education; and set self-care goals with the older adult	Symptom assessment form, pulse oximeter, dyspnea management handbook	30 min	Assessment and shared goal setting are the first steps of self-management[10]
2	Teach and practice pursed-lip breathing, diaphragmatic breathing, and the forward-leaning sitting position	Demonstration video, symptom diary	20 min × 2	Breathing techniques reduce air trapping and breathlessness[8]
3	Demonstrate inhaler use with return demonstration; advise on avoiding triggers (cigarette smoke, dust, smoke from fires); and provide smoking cessation counseling	Inhaler demonstration devices, inhaler-use checklist, poster	20 min × 2	Smoking cessation and correct medication use are key to disease control and exacerbation prevention[8]

Week	Activities/Content	Materials	Duration	Rationale
4	Teach effective coughing for sputum clearance and energy conservation in daily activities (activity pacing, regular rest)	Flip chart, brochure	20 min × 2	Reduces the work of breathing and helps older adults perform daily activities independently[6,9]
5	Practice home exercise (walking, arm raising with breathing) and provide nutritional advice	Exercise picture sheet, diary	20 min × 2	Exercise and self-management improve functional capacity and quality of life[8,9]
6	Develop an exacerbation action plan (green–yellow–red zones) and channels for seeking help (call 1669 and Namon Hospital)	Action plan card, LINE group	20 min × 2	Recognizing warning signs and seeking timely help reduce emergency visits[9,10]
7	Manage stress and anxiety (relaxation) and involve family, caregivers, and VHVs in care	Stress assessment form, caregiver handbook	20 min × 2	Psychosocial problems affect the quality of life of older adults with COPD[7]
8	Review knowledge and skills using teach-back, conduct posttest measurement, and hand over information to care managers and SHPHs	Dyspnea self-management behavior questionnaire, WHOQOL-BREF-THAI	30 min	Reassessment and continuous follow-up help sustain behavior change[10]

2.2 Participant characteristics Most participants in the experimental (n=31) and control (n=30) groups were male (70.97% and 70.00%), with mean ages of 68.74±6.12 and 69.20±5.87 years; 35.48% and 36.67% were current smokers, and most had GOLD grade 2 disease (54.84% and 56.67%). No characteristic differed significantly between the groups (p>0.05), as shown in Table 2.

Table 2 Comparison of participant characteristics between the experimental and control groups

Characteristic	Experimental group (n=31)	Control group (n=30)	p-value
Male, n (%)	22 (70.97)	21 (70.00)	0.934

Age (years), $\bar{x}$±S.D.	68.74±6.12	69.20±5.87	0.766
Current smoker, n (%)	11 (35.48)	11 (36.67)	0.923
Disease duration (years), $\bar{x}$±S.D.	5.82±3.10	6.15±3.35	0.691
GOLD grade 1, n (%)	4 (12.90)	4 (13.33)	0.982
GOLD grade 2, n (%)	17 (54.84)	17 (56.67)	
GOLD grade 3, n (%)	10 (32.26)	9 (30.00)	
At least 1 comorbidity, n (%)	18 (58.06)	17 (56.67)	0.912
Primary education or lower, n (%)	21 (67.74)	20 (66.67)	0.929
Dyspnea mMRC ≥ 2, n (%)	14 (45.16)	13 (43.33)	0.886
ED visit in the 3 months before the intervention, n (%)	3 (9.68)	4 (13.33)	0.71

3. Comparison of Dyspnea Self-Management Behavior, Quality of Life, and ED Visits (Objective 3)

3.1 Within-group comparison before and after the intervention After the intervention, the experimental group had significantly higher mean scores for dyspnea self-management behavior (78.45±6.31) and quality of life (101.22±8.40) than before (52.84±8.12 and 84.35±9.10) (t=19.80 and 11.32, df=30, p<0.001), whereas the control group showed no significant change in either score (p=0.078 and 0.229), as shown in Table 3.

Table 3 Comparison of mean dyspnea self-management behavior and quality of life scores before and after receiving the guideline, by group (paired t-test)

Variable	Group	Before		After		Level	$\bar{d}$	95%CI	t	p-value
		$\bar{x}$	S.D.	$\bar{x}$	S.D.					
Dyspnea self-management behavior (max. 100)	Exp.	52.84	8.12	78.45	6.31	M⟶H	25.61	22.97- 28.25	19.80	<0.001*
Dyspnea self-management behavior (max. 100)	Ctrl.	53.40	7.95	55.10	8.20	M⟶M	1.70	-0.20- 3.60	1.83	0.078

Variable	Group	Before		After		Level	d̄	95%CI	t	p-value
		$\bar{x}$	S.D.	$\bar{x}$	S.D.					
Quality of life (max. 130)	Exp.	84.35	9.10	101.22	8.40	M⟶G	16.87	13.83- 19.91	11.32	<0.001*
Quality of life (max. 130)	Ctrl.	85.10	9.32	86.47	9.15	M⟶M	1.37	-0.91- 3.65	1.23	0.229

*Statistically significant at p-value <.05; Exp. = experimental group, Ctrl. = control group; M = moderate, H = high, G = good

3.2 Between-group comparison Before the intervention, mean scores in both domains did not differ between the groups (p=0.787 and 0.752). After the intervention, the experimental group had significantly higher dyspnea self-management behavior and quality of life scores than the control group (55.10±8.20 and 86.47±9.15) (t=12.49 and 6.56, df=59, p<0.001; Cohen's d ≈ 3.20 and 1.68), and ANCOVA adjusting for pretest scores yielded consistent results, as shown in Table 4.

Table 4 Comparison of mean dyspnea self-management behavior and quality of life scores between the experimental and control groups (independent t-test)

Variable	Experimental group		Control group		Level	d̄	95%CI	t	p-value
	$\bar{x}$	S.D.	$\bar{x}$	S.D.					
Dyspnea self-management behavior, before (max. 100)	52.84	8.12	53.40	7.95	M/M	-0.56	-4.68- 3.56	-0.27	0.787
Dyspnea self-management behavior, after (max. 100)	78.45	6.31	55.10	8.20	H/M	23.35	19.61- 27.09	12.49	<0.001*
Quality of life, before (max. 130)	84.35	9.10	85.10	9.32	M/M	-0.75	-5.47- 3.97	-0.32	0.752
Quality of life, after (max. 130)	101.22	8.40	86.47	9.15	G/M	14.75	10.25- 19.25	6.56	<0.001*

*Statistically significant at p-value <.05; M = moderate, H = high, G = good

3.3 ED visits for dyspnea During the 3-month follow-up, 2 participants (6.45%) in the experimental group visited the ED, significantly fewer than the 9 (30.00%) in the control group (χ^2=5.72, p=0.017; Yates χ^2=4.24, p=0.040; difference in proportions 23.55 percentage points, 95% CI 5.01 to 42.09). Although the estimate for the experimental group was below the hospital target (≤10%), its exact 95% CI (0.79–21.42) does not allow the conclusion that the target was achieved. In the 3 months before the intervention, ED visits did not differ between the groups (9.68% and 13.33%; Fisher's exact p=0.71), as shown in Table 5.

Table 5 Comparison of ED visits for dyspnea within 3 months between the experimental and control groups (chi-square test)

ED visit	Experimental group (n=31), n (%)	Control group (n=30), n (%)	χ^2	p-value
Visited	2 (6.45)	9 (30.00)	5.72	0.017*
Did not visit	29 (93.55)	21 (70.00)		

*Statistically significant at p-value <.05 (Fisher's exact p=0.022; RR 0.22, 95% CI 0.05 to 0.91)

Discussion

The developed guideline suited the context of Namon District because it was based on an analysis of local problems and developed from evidence together with input from the multidisciplinary team, consistent with the concept of evidence-based practice, which integrates the best available evidence with clinical judgment and patients' needs.[13,14] The AGREE II[16] (86.40%) and CVI (0.92) results indicate good quality, and care by a multidisciplinary team supports continuity of care,[18] consistent with the involvement of care managers, caregivers, and VHVs in home follow-up under this guideline.

The higher self-management behavior and quality of life scores in the experimental group may be attributable to demonstration, repeated practice, teach-back, goal setting, and continuous follow-up visits, which strengthen skills and self-efficacy according to Bandura's concept[19] and the self-management process emphasizing goal setting and problem solving.[10] These findings are consistent in direction with the Cochrane review,[9] the GOLD report,[8] and Thai studies.[11,12] However, the 14.75-point difference in WHOQOL-BREF-THAI quality of life scores was much larger than the effect in the Cochrane review (SGRQ reduction of 2.86 points), which may relate to bias from unblinded self-report, non-randomization, and different instruments; therefore, only directional comparisons can be made. In addition, the inclusion of exercise and nutrition in the guideline is consistent with studies among older adults with COPD.[20,21]

The lower ED visit rate in the experimental group (6.45% vs 30.00%) may be explained by participants having an exacerbation action plan, using inhalers correctly, applying breathing techniques, and better avoiding triggers. Although the point estimate was below the hospital target (≤10%), the confidence interval remained wide. Limitations of this study include non-random allocation by sub-district; a small sample from a single district; only 3 months of follow-up; self-reported behavior data and

unblinded data collectors; ED data from a single hospital with only 1 1 events; 5 withdrawals (7.58%); and possible effects of season or air quality on ED visits.

Conclusion

Developing a clinical nursing practice guideline for dyspnea self-management among older adults with COPD yielded a 6-component guideline that passed quality assessment and was implemented for 8 weeks in communities of Namon District. After implementation, the experimental group had significantly higher dyspnea self-management behavior and quality of life scores than before the intervention and than the control group ($p<0.001$), and fewer ED visits than the control group (6.45% vs 30.00%; Fisher's exact test $p=0.022$).

Recommendations

1. Recommendations for applying the findings: The guideline should be further piloted in SHPHs in Namon District with outcome monitoring, and scaled up once confirmed by studies with better control of bias. It should be integrated with the long-term care system, and the competencies of care managers, caregivers, and VHVs should be strengthened so that they understand the continuous care process for older adults with COPD.

2. Recommendations for future research: Randomized controlled studies using sub-district (cluster) randomization and blinded assessors should be conducted, with dyspnea (e.g., mMRC/CAT) and hospitalization as outcomes. Future studies should also expand the sample size and study areas, follow long-term outcomes (6–12 months), and examine the cost-effectiveness of the guideline.

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