Effect of Health Educational Guidelines on Self-Management Practices among Patients with Chronic Obstructive Pulmonary Disease: A Scoping Review

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Received Feb 24, 2022, accepted Aug 11, 2022

ABSTRACT

Context: Chronic obstructive pulmonary disease (COPD) is a type of lung disease characterized as chronic lung airflow obstruction that interferes with normal respiration. The World Health Organization ranked it as the third leading cause of death. The evidence indicates that health education may improve patients' outcomes.

Aim: This scoping review aimed to identify empirical evidence related to the effect of health educational guidelines on self-management practices among patients with chronic obstructive pulmonary disease improve self-management practices.

Methods: Studies published between 2015-2021 and recruited from authentic databases, including MEDLINE, PubMed, CINAHL, and EBSCO, were reviewed critically to explore the effect of health educational guidelines on patient self-management practices.

Results: There are four themes generated from this scoping review. In this scoping review, 14.700 articles were searched. After checking for duplicates, 1344 articles were left to evaluate titles and abstracts. This evaluation left 301 articles for reading of full texts. Of these, 238 articles did not meet the aim of this review. Ten studies were included in the current review.

***Conclusion*:** This scoping review found that health educational guidelines consider an important need to improve self-management practices. Health education can improve patients' health outcomes and thus should be considered an essential component of the overall management of COPD.

Keywords: Chronic obstructive pulmonary disease, self-management practices, health educational guidelines, scoping review

Citation: *Alharbi, E. R., Sofar, S. M., & Wazqar, D. Y. (2022).* Effect of health educational guidelines on self-management practices among patients with chronic obstructive pulmonary disease: A scoping review. *Evidence-Based Nursing Research*, 4*(4),* 55-68. http://doi.org/10.47104/ebnrojs3.v4i4.258 .

1. Introduction

Chronic obstructive pulmonary disease (COPD) is a type of lung disease that causes chronic airflow obstruction in the lungs that interferes with normal respiration (World Health Organization *[WHO], 2020).* COPD also describes a set of respiratory problems where the airflow in the alveoli is unalterably limited, impairing gas exchange *(Varmaghani et al., 2019).* Three respiratory conditions are covered: chronic bronchitis, small airway disease, emphysema, and occasionally there may be a component of asthma *(Casey, 2016).* The WHO ranked COPD as the third leading cause of death, with particular prevalence in low and middle-income countries *(Alqahtani et al., 2020).*

Globally, the burden of disease prevalence is 251 million cases of COPD (*WHO, 2017).* Data from WHO shows that the outcomes for patients with COPD are even worse in developing countries, where more than 90% of deaths occur due to the inability to access treatment and lack of COPD prevention and management strategies *(WHO, 2022).* Moreover, in Ethiopia, COPD prevalence was 17.8% *(Woldeamanuel et al., 2019).* In China, COPD prevalence has climbed from 2.7% in 1990 to 13.6 % in 2015 *(Cai et al., 2020).* In addition, the prevalence of COPD in the Middle East and North Africa (MENA) area is 3.6%, ranging from 1.9% in the UAE to 6.1% in Syria *(Mahboub et al., 2017).*

The causes of COPD are a complex combination of genetic predisposition and exposure to risk-enhancing environmental conditions. The main cause of COPD is smoking, but up to 30% of people with COPD had never smoked *(López-Campos et al., 2016).*

COPD has many signs and symptoms, including dyspnea, cough, and abnormal pulmonary function, mainly due to nonreversible airway obstruction *(Weldam et al., 2017).* COPD exacerbation is an acute occurrence marked by worsening the patient's respiratory symptoms that extend beyond usual day-to-day changes and lead to a change in daily medication *(Yan et al., 2016).* Signs and symptoms of COPD exacerbation, such as breathlessness, extreme cough, and expectoration, followed by fatigue, depression, malnutrition, sleep disorders, and daily living limitations,

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may lead to frequent hospitalization and increased risk of mortality *(Wang et al., 2018).*

Like other chronic diseases, COPD considered a major cause of death in most countries and a significant burden on health care organizations and societies *(Jolly et al., 2018).* According to a study conducted in Saudi Arabia by *Al Subaiei (2018),* the burden of COPD is rising in middle eastern countries, particularly Saudi Arabia. Moreover, the Saudi Ministry of Health (MOH) estimates that the number of physicians and nurses per 10,000 population in Saudi Arabia is 12.5 and 29.8, respectively, and around 600 chest physicians work in multiple sectors in Saudi Arabia, accounting for 0.73% of physicians *(MOH, 2014).*

Many healthcare providers in various countries, including Saudi Arabia, lack knowledge regarding the importance of following education guidelines for COPD management *(Alsubaiei et al., 2017).* It may be due to time constraints or disagreement with the recommendations. This burden on patients and the health care system can be prevented by raising awareness and understanding through patient education pertinent to issues, focusing on improving patient behaviors and self-management practices *(Wang et al., 2018).*

Health education has been employed as a complementary approach to managing chronic diseases, decreasing symptom burden, and improving health status *(Helvaci & Metin, 2020).* Health education intervention related to self-management improves patients' understanding of their COPD diagnosis and prevents exacerbations *(Bourbeau et al., 2018).* Self-management practices are organized interventions for people that aim to improve health behaviors and self-care practices *(Lenferink et al., 2017).* Self-management practices of the patient are essential, particularly during the stable phase, to stop the progression of the disease and avoid exacerbation and hospitalization *(Yang et al., 2019).*

The interventions used in disease management for patients with COPD have previously been studied by researchers, including pulmonary rehabilitation, outreach nursing, multidisciplinary treatment, patient self-management, patient education and counseling, and case management *(Yan et al., 2016).* A new approach to the self-management of COPD is a structured, individualized, and usually multi-component approach, with the aims of empowering patients, interacting with and assisting patients to strongly adapt their health behaviors, and promoting their practices to improve self-management of their condition *(Wang et al., 2018).* Self-management of COPD mainly includes self-recognition and symptom management, medication adherence, a balanced diet, breathlessness management, smoking cessation, and daily physical activity to preserve good health *(Yadav et al., 2020).*

Guidelines for health education strengthen COPD self-management by encouraging patients to develop daily life management strategies, focusing on symptom relief *(Ng & Smith, 2017).* Understanding and using health education guidelines for health-related decision-making helps empower patients to manage their situations, positively impacts self-management, and promotes health outcomes. The process of adequate self-management requires improving self-management awareness, skills, and patient confidence *(Chang & Dai, 2019).*

2. Significance of the study

COPD is a common disease that affect human health and negatively impacts patients' life expectancy and quality of life *(Yang et al., 2019).* Health education guidelines improve COPD self-management, particularly the management of symptoms, by equipping patients with daily life management skills *(Ng & Smith, 2017).* Self-management of COPD is increasing in importance. However, it stays hard to embed self-management into usual clinical care, and the implementation of self-management is understood to be a complex interaction at the patient, health care provider, and health system levels *(Hillebregt et al., 2017).* Understanding and utilizing health education guidelines enhance patients' ability to make health-related decisions and manage their condition, thus positively affecting self-management and improving health outcomes. The progression toward adequate self-management requires an accumulation of patient knowledge, skills, and confidence in self-management *(Chang & Dai, 2019).*

3. Aim of the study

This scoping review aimed to identify empirical evidence related to the effect of health education on patients with the chronic obstructive pulmonary disease to improve self-management practices and identify gaps in nursing literature regarding this topic.

3.1. Review Question

The question of this scoping review was defined using the Population- Intervention-Comparison-Outcome-Time (PICOT) format *(Melnyk et al., 2010).* PICOT Question was, "Among patients with COPD, how patients receiving the health educational guidelines compared with patients who did not receive the health educational guidelines affect self-management practices?"

Table(1): PICOT Question.

PICOT	CONTENT	PICOT QUESTION
P	Patients with COPD	Among patients with COPD, how patients receiving the health educational guidelines compared with patients who did not receive health educational guidelines affect self-management practices?
I	Receiving the Health Educational Guidelines	
C	Non-receiving the Health Educational Guidelines	
O	self-management practices level	
T	2015 to 2021	

4. Methodology

This scoping review was conducted to search for evidence from various types of research, define the characteristics of each study and its samples, and describe the effect of health educational guidelines on self-management practices among Patients with COPD. This scoping review used Arksey and O'Malley's Framework *(Arksey & O'Malley, 2005)* and the Joanna Briggs Institute Framework (JBI) (2015). This review followed the Preferred

Reporting Items for Systematic Reviews and Meta-Analyses Modification for Scoping Reviews (PRISMA-ScR) search guidelines *(Moher et al., 2009).*

4.1. Search Strategy

The databases searched for relevant literature were EBSCO, PubMed, MEDLINE, CINAHL, and Google Scholar. Search words utilized in several databases include: Chronic Obstructive Pulmonary Disease OR COPD AND health educational guidelines OR health education AND nursing management OR nursing intervention AND self-management OR self-management practices AND prevent COPD exacerbation. Furthermore, Boolean operators like 'AND,' 'OR,' and 'NOT' were used to obtain more focused results *(Barker & Barker, 2013).* The search strategy utilized in this review included manually screening the reference lists in the involved studies to recognize further related studies. The search was limited to original journal articles published between 2015 and 2020.

4.2. Study Inclusion and Exclusion Criteria

The inclusion criteria for selecting studies were articles that examined the effect of health education interventions/guidelines on self-management practices among adult patients with COPD, articles that were available in English, and articles published in the last five years between 2015-2020, while the exclusion criteria were articles related to acute COPD conditions, articles related to other chronic diseases were excluded.

4.3. Study Selection

PRISMA- (2009) was used to guide the selection of appropriate studies for this review. Initially, 17,400 articles were retrieved (371 from PubMed, 88 from CINAHL, 213 from MEDLINE, and 16,728 from Google Scholar), then the titles and abstracts were screened. After removing the 1344 duplicated articles, 16,056 articles were screened, then 15,755 articles were excluded for many reasons as they were not relevant to the review question, 301 full-text articles were evaluated for eligibility, and 289 full-text studies were excluded for various reasons (10 articles were not peer-reviewed, 238 articles included COPD combined with other diseases, and 41 articles involved severely ill patients), two articles were qualitative studies. Finally, the remaining ten full-text articles that included quantitative synthesis were retrieved to be included in this scoping review.

4.4. Charting of Data

Data extraction table matrix (Table 2) was developed and used to collect studies characteristics, including authors, years of publication, country, purpose, methods, sample, setting, tools, and main finding.

4.5. Characteristics of the Included Studies

Most of the studies found in the literature review (eight out of 10 studies) undertook randomized controlled trials *(Billington et al., 2015; Bringsvor et al., 2018; Chang & Dai, 2019; Jolly et al., 2018; Ng & Smith, 2017; Sánchez-Nieto et al., 2016; Park et al., 2020; Poureslami et al., 2016),* one

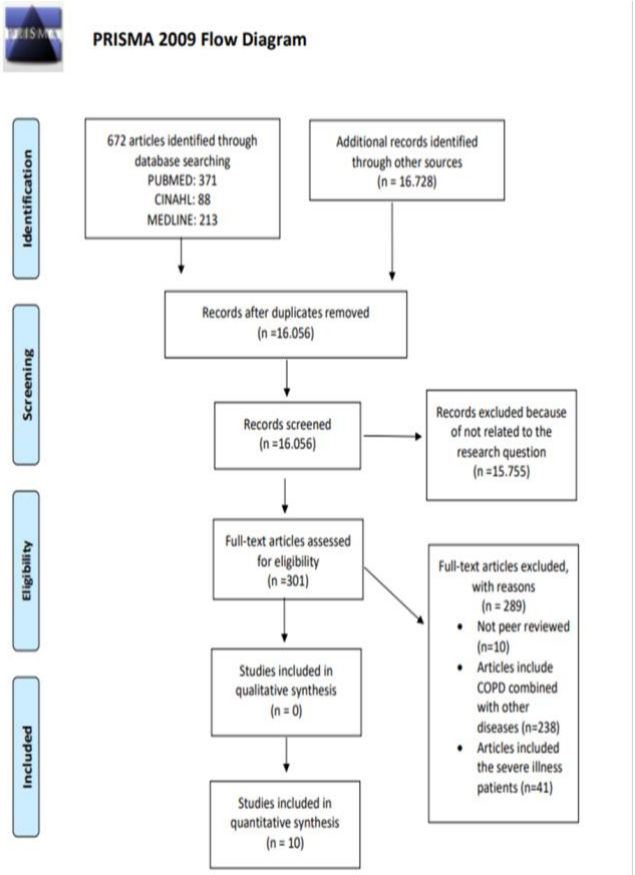

Figure (1): PRISMA Flow diagram of articles selection process.

study conducted by *Ozturk et al. (2020)* was prospective case-control, and one study *Bourbeau et al. (2018)* was quasi-experimental.

The largest sample size was observed in the study by *Jolly et al. (2018),* which examined 577 patients divided into an intervention group (n = 289) and a control group (n = 288). In contrast, the smallest sample size was found in a study conducted by *Park et al. (2020)* involving 44 patients. All the articles describing the effect of health education on self-management among patients with COPD were published between 2015-2020. The sample sizes in these studies ranged from 44 to 577, and focused on patients with COPD who visited outpatient clinics, received primary health care, or were admitted to hospital.

Two out of ten studies were conducted in China *(Ng & Smith, 2017; Poureslami et al., 2016),* and two were conducted in the UK *(Billington et al., 2015; Jolly et al., 2018).* The remaining studies were conducted in Norway *(Bringsvor et al., 2018),* Canada *(Bourbeau et al., 2018),* Taiwan (*Chang & Dai, 2019),* Spain *(Sánchez-Nieto et al., 2016);* Turkey *(Ozturk et al., 2020)* and Korea *(Park et al., 2020).* The included studies were conducted in different settings, including major hospitals *(Bringsvor et al., 2018; Ng & Smith, 2017; Sánchez-Nieto et al., 2016;* outpatient clinics *(Chang & Dai, 2019; Öztürk et al., 2020; Park et al., 2020; Poureslami et al., 2016),* and primary care and family medicine clinics *(Billington et al., 2015; Bourbeau et al.,*

2018). One of the studies *(Jolly et al., 2018)* collected data from 71 general practices in four different cities in England to increase the number of participants.

Various scales were used in the included studies; four out of 10 studies *(Billington et al., 2015; Bourbeau et al., 2018; Sánchez-Nieto et al., 2016; Ozturk et al., 2020)* used the COPD Assessment Test (CAT) *(Jones et al., 2009)* to measure participants' health status and well-being; two studies *(Ng & Smith, 2017; Poureslami et al., 2016)* used the COPD self-efficacy scale *(Wigal et al., 1991)* to identify participants' self-assessed level of knowledge about COPD and its management, as well as their readiness to manage exacerbations; six studies *(Bourbeau et al., 2018; Chang & Dai, 2019; Jolly et al., 2018; Ng & Smith, 2017; Sánchez-Nieto et al., 2016; Ozturk et al., 2020)* used the modified Medical Research Council (MRC) scale *(Bestall et al., 1999).*

One study by *Sánchez-Nieto et al. (2016)* used a social risk questionnaire to assess the five areas of family, economic and social relations, social support networks and housing situations; one study conducted by *Chang and Dai (2019)* used a COPD questionnaire which developed by *Van der Molen et al. (2003)* to evaluate COPD knowledge. One study conducted by *Jolly et al. (2018)* used five scales: St George's Respiratory Questionnaire (SGRQ-C) to measure patients' health-related quality of life *(Jones et al., 1991),* the MRC dyspnoea scale *(Bestall et al., 1999),* the International Physical Activity Questionnaire *(Hagströmer et al., 2006),* the Hospital Anxiety and Depression Scale *(Zigmond & Snaith, 1983)* and the Stanford self-efficacy scale *(Giese-Dows et al., 2004)*. One study conducted by *Öztürk et al. (2020)* used four scales: COPD Assessment Test (CAT), St George's respiratory questionnaire (SGRQ), hospital anxiety and depression scale (HADS), and modified British medical research council (mMRC) dyspnea scale.

The included studies used outcome measures that varied in validity and reliability. One study conducted by (Jolly et al., 2018) used the St George's Respiratory Questionnaire (SGRQ-C), modified Medical Research Council dyspnea scale (MRC), International Physical Activity Questionnaire, Hospital Anxiety, and Depression Scale, Stanford self-efficacy scale, and all these scales' reliability and validity were not mentioned in the study. Another study conducted by *Billington et al. (2015)* used a COPD Assessment Test that is reliable by using Cronbach's formula for coefficient using pooled data from all patients; values of 0.70 are generally considered acceptable for aggregate data; the tool was valid without mentioning the validity procedures.

One study done by *Chang and Dai (2019)* used tools without mentioning the validity procedures, while the reliability for these tools as the following: COPD-Q, which had acceptable internal consistency (Cronbach's $\alpha = 0.72$) and reliability is high ($\gamma = 0.9$), PRAISE which has high internal consistency (Cronbach's $\alpha = 0.95$), and CAT which has a Cronbach's α of 0.88. In addition, two out of ten studies *(Sánchez-Nieto et al., 2016; Poureslami et al., 2016)* did not mention the tools' reliability and validity.

The health education of self-management implemented for COPD patients in the included studies had diverse characteristics. Six of the ten studies *(Bourbeau et al., 2018; Bringsvor et al., 2018; Chang & Dai, 2019; Ng & Smith, 2017; Sánchez-Nieto et al., 2016; Poureslami et al., 2016)* utilized written material consisting of health educational guidelines; two studies *(Billington et al., 2015; Jolly et al., 2018)* used telephone-provided verbal information and advice; and two studies *(Ng & Smith, 2017; Öztürk et al., 2020)* used educational sessions comprising presenting and practicing workshops. One study *(Park et al., 2020)* used a smartphone app-based self-management program to educate patients regarding exercises, symptom management, and social support.

The studies included in this review assessed different follow-up time points after the interventions. Three of the ten studies *(Bourbeau et al., 2018; Jolly et al., 2018; Sánchez-Nieto et al., 2016)* measured outcomes one year after the intervention; four studies *(Chang & Dai, 2019; Öztürk et al., 2020; Poureslami et al., 2016; Billington et al., 2015)* evaluated participants three months after the educational intervention; two studies *(Ng & Smith, 2017; Park et al., 2020)* measured outcomes six months after the intervention.

In addition, the included studies had variable intervention durations; two of the ten studies *(Bringsvor et al., 2018; Jolly et al., 2018)* had an intervention duration of 11 weeks; one study *(Billington et al., 2015)* implemented a 6-week intervention; one study *(Sánchez-Nieto et al., 2016)* had an intervention duration of 3 months; and one study *(Park et al., 2020)* employed a 4-week intervention duration.

Several instruments with different scoring systems were used in the included studies. Five studies *(Billington et al., 2015; Bourbeau et al., 2018; Sánchez-Nieto et al., 2016; Chang & Dai, 2019; Öztürk et al., 2020)* used the COPD Assessment Tool (CAT), which provides a score from 0 to 40 and indicates the impact of the disease; a score of less than 10 suggests that COPD has a low impact on the patient, a score of 10–20 indicates a medium impact and a score of 21–40 suggests a moderate to severe impact. Two studies *(Jolly et al., 2018; Öztürk et al., 2020)* used the St. George's Respiratory Questionnaire (SGRQ-C), with scores ranging from zero to 100 and high scores indicating high impairment in quality of life. One study *(Park et al., 2020)* used the Chronic Respiratory Disease Questionnaire, which has four subscales and rates responses on a seven-point scale from one to seven, with higher scores indicating more control over the disease and symptoms.

4.6. Appraisal of Quality

The ten articles found from the search were appraised in terms of their quality, using Joanna Briggs Institute (JBI) Critical Appraisal tool to assess the methodological quality of each study and to determine the extent to which each study addressed the possibility of bias in its design, conduct, and analysis *(Tufanaru et al., 2017).* The JBI Critical Appraisal Tool checklist consists of questions regarding study design.

Eight of the ten studies were assessed using the appraisal checklist for randomized controlled trials *(Billington et al., 2015; Bringsvor et al., 2018; Chang & Dai, 2019; Jolly et al., 2018; Ng & Smith, 2017; Sánchez-Nieto et al., 2016; Park et al., 2020; Poureslami et al., 2016),* which includes 13 questions. One study *(Öztürk et al., 2020)* was assessed using the appraisal checklist for case-control studies, which

includes ten questions, and one study *(Bourbeau et al., 2018)* was assessed using the appraisal checklist for quasi-experimental studies that includes nine questions. All appraisal checklists consisted of questions with four-choice answers (Yes, no, not applicable, and unclear).

Billington et al. (2015); Jolly et al. (2018); Park et al. (2020) did not blind the participants to treatment assignments. According to *Billington et al. (2015),* it was not feasible to blind the patients to treatment allocation. According to *Park et al. (2020),* the reason for this was that the people delivering the intervention and the participants were not blinded to treatment allotment due to the nature of the intervention. Moreover, *Chang & Dai (2019), Sánchez-Nieto et al., (2016), and Park et al. (2020)* did not blind the investigator who delivered treatment to treatment assignment. *Sánchez-Nieto et al. (2016) and Chang &Dai (2019)* used single-blind studies in their research; in this type of clinical trial, the experimenters are aware of which subjects are receiving the treatment or independent variable, but the participants of the study were not. In *Jolly et al. (2018),* the explanation for blinding the investigator was unclear. On the other hand, *Park et al. (2020); Chang & Dai (2019)* did not blind assessors to treatment assignment, while in *Jolly et al. (2018),* it was unclear whether assessors were blinded to treatment assignment. In addition, in the studies by *Bringsvor et al. (2018); Jolly et al. (2018),* the follow-up was not completed; *Jolly et al. (2018)* explained that some patients withdrew from the groups, resulting in an imbalance in follow-up rates between study arms, while *Bringsvor et al. (2018)* clarified that the follow-up was not completed as a result of a clerical error, due to which some of the intervention participants did not receive follow-up questionnaires (Table 3).

Nurash et al. (2020) and Putra et al. (2020) used percentages to evaluate the methodological quality of the studies. The methodological quality assessments of the studies included in this review are summarised in Tables 3, 4, and 5. The quality of the included studies ranged from 69% to 100% based on the criteria of the JBI Critical Appraisal Tool for randomized controlled trials, quasi-experiments, and case-control studies. Quality assessment scores are divided into three levels: high quality (66.6%–100%), moderate quality (33.3%–66.6%), and poor quality (0%–33.3%). All studies included in this review received high scores, indicating they were of high quality.

Table (3): Quality appraisal of included studies (Randomized Control Trial).

Research	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Total	Quality
Jolly et al. (2018)	Y	Y	Y	N	U	U	Y	N	Y	Y	Y	Y	Y	9/13	69%
Ng and Smith (2017)	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	13/13	100%
Chang and Dai (2019)	Y	Y	Y	Y	N	N	Y	Y	Y	Y	Y	Y	Y	11/13	85%
Billington et al. (2015)	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	12/13	92%
Bringsvor et al. (2018).	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	12/13	92%
Nieto et al. (2016)	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	12/13	92%
Park et al. (2020)	Y	Y	Y	N	N	N	Y	Y	Y	Y	Y	Y	Y	10/13	77%
Poureslami et al. (2016)	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	13/13	100%

Q1: Was true randomization used?, Q2: Was allocation concealed?, Q3: Were groups similar at the baseline?, Q4: Were participants blind to assignment?, Q5: Were those delivering treatment blind to assignment?, Q6: Were outcomes assessors blind to groups assignment?, Q7: Were groups treated identically?, Q8: Was follow up complete?, Q9: Were participants analyzed in the groups to which they were randomized?, Q10: Were outcomes measured in the same way for groups?, Q11: Were outcomes measured reliably?, Q12: Was appropriate statistical analysis used?, Q13: Was the trial design appropriate?.

The study by *Öztürk et al. (2020)* used a prospective case-control design in which the case and control groups matched appropriately and had the same criteria for identification. Confounding factors were identified, but no strategies to address confounding factors were stated.

Table (4): Quality appraisal of included studies (case-control).

Research	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Total	Quality
Öztürk et al. (2020)	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	9/10	90%

Q1: Were the groups compared to the presence of disease in cases or the absence of disease in controls? Q2: Were cases and controls matched appropriately? Q3: Were the same criteria used for the identification of cases and controls? Q4: Was exposure measured in a standard, valid and reliable way? Q5: Was exposure measured in the same way for cases and controls? Q6: Were confounding factors identified? Q7: Were strategies to deal with confounding factors stated? Q8: Were outcomes assessed in a standard, valid and reliable way for cases and controls? Q9: Was the exposure period of interest long enough to be meaningful? Q10: Was appropriate statistical analysis used?

Another study by *Bourbeau et al. (2018)* used a quasi-experimental design. In this study, the author used a pre-post intervention design. In addition, the participants included in any comparisons received similar treatment, and the outcomes were measured similarly.

Table (5): Quality appraisal of included studies (Quasi-experimental).

Research	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Total	Quality
Bourbeau et al. (2018)	Y	Y	Y	N	Y	Y	Y	Y	Y	8/9	89%

Q1: Clear cause and effect? Q2: Similar participants in any comparisons? Q3: Receiving similar treatment, Q4: Was there a control group? Q5: multiple measurements of the outcome? Q6: Complete follow-up? Q7: Outcomes measured in the same way? Q8: Outcomes measured reliably, Q9: Appropriate statistical analysis?

5. Results

The screening results, using both electronic and manual searching methods, accepted ten articles for inclusion, emphasizing the effect of health educational guidelines on improving self-management practices among patients with COPD. The included studies were retrieved and categorized into four themes, including the effect of self-management on self-efficacy, physical activity, symptom management, and emotional management.

5.1. Effect of Self-Management Education on Self-efficacy

Three out of ten studies reported the positive effect of health education on self-efficacy, while another two articles reported no significant effect. The first study was conducted by *Chang & Dai (2019)* from January 2015 to May 2016. It was a single-blind, randomized controlled trial at a medical center in northern Taiwan. Sixty patients were allocated to control and experimental groups. The experimental group received a program of flipped teaching, customized action plans, and scheduled phone interviews to improve self-management. As a result of using the Pulmonary Rehabilitation Adapted Index of Self-Efficacy (PRAISE), the findings showed that the patients receiving the self-management flipped teaching program had a statistically significant increase in their self-efficacy (p<0.01).

The second study was a randomized controlled trial performed by *Park et al. (2020)* at pulmonary medicine outpatient clinics in two metropolitans, tertiary care, and academic hospitals. They used the Self-Efficacy for Chronic Disease 6-Item Scale (SEMCD) to assess self-efficacy. This research investigated the impact of self-efficacy on managing dyspnea, exacerbation, physical activity, and decreasing sedentary time. Compared to baseline measures, the study's results showed better self-efficacy in the experimental group for maintaining exercise, raising physical activity levels, and decreasing sedentary time.

The third study involved a mixed sequential explanatory method designed by *Ng & Smith (2017)* in China. The primary outcome of using the COPD Self Efficacy Scale (CSES) was self-efficacy, and qualitative data were collected sequentially from these patients through three focus groups to supplement the quantitative results. There were substantial differences between experimental and control groups, in both pre-test and post-test follow-up evaluations in all subscales and total CSES value. However, the Wilcoxon signed-rank test reported a significant improvement from pre-test to post-test follow up assessment on overall scale (p=0.015).

The fourth study was a randomized controlled trial performed by *Bringsvor et al. (2018).* A total of 182 COPD patients from 11 municipalities on the west coast of Norway were assigned to either the experimental group who received education regarding living with COPD in addition to usual care or the control group who received usual care and their self-efficacy was assessed using the General Self-Efficacy Scale (GSES). The results of the study showed no statistically significant changes in self-efficacy.

The fifth study was a multicenter randomized controlled trial conducted by *Jolly et al. (2018)* in four areas of England. A total of 577 patients were selected from 71 general practices in Birmingham and West Midlands South, Greater Manchester, West Midlands North, and Oxfordshire or Gloucestershire in England. Patients were randomized into two groups telephone health training (n = 289) or routine treatment (n = 288). The authors used the Stanford self-efficacy scale to control their COPD and engage in the activity. At 6 and 12 months, the study results showed no differences between the two groups on the Stanford Self-Efficacy Scale.

5.2. Effect of self-management education on daily life activity

Physical activity is any body movement produced by skeletal muscles that require energy. Mild, moderate, and strong intensity of physical activity needs to promote health *(WHO, 2020).* A strong, meaningful effect of health education on self-management regarding daily physical activity was recorded in four studies. The first study was a randomized controlled trial conducted by *Ng & Smith (2017)* in China. A total of 50 patients with COPD met the requirements for inclusion and agreed to participate in the study. They were assigned randomly to the experimental (n=26) and control (n=24) groups. Wilcoxon signed-rank tests showed a statistically significant improvement in the total scale of the COPD Self Efficacy Scale (CSES) (p=0.015) and subscales of CSES regarding the physical exertion (p=0.01) from pre-test to post-test follow-up evaluation in the experimental group.

The second study was a single-blinded, randomized controlled trial performed by *Chang & Dai (2019)* between January 2015 and May 2016 at a health center in northern Taiwan, with 60 patients randomly assigned to experimental and control groups. This study found that receiving a self-management flipped education program led to a statistically significant increase in activation levels (p<0.01) compared to the control group, from baseline to a one-month and a three-month follow-up.

The third study was performed by *Jolly et al. (2018).* In this study, patients randomized to telephone health training (n=289) or routine care (n=288). After six months, the total

physical activity, including walking and intermediate to strong physical activity (MVPA), was statistically significantly increased in the experimental group, based on the International Physical Activity Questionnaire.

The fourth study was a randomized controlled trial performed by *Park et al. (2020).* The study participants were 44 patients with COPD recruited in pulmonary medicine outpatient clinics at two tertiary hospitals in a metropolitan city in Korea. The participants in the experimental group showed a significant increase in self-care behavior; longer distance on the 6 Minute Walk Test (6MWT); increased overall activity count per wear time and step count; and increasing physical activity, and decreasing sedentary time, compared to the baseline measurement.

5.3. Effect of self-management education on symptom management

Symptom management relieves symptoms by encouraging patients to enhance daily living management skills. Four out of ten included studies reported an improvement in symptom management. One study conducted *by Billington et al. (2015)* found that the scores of symptom management for patients with COPD in the intervention group had improved after receiving self-management education, which is considered a clinically significant change.

The second study reported an improvement in symptom management through proper use of medication; it was conducted by *Bourbeau et al. (2018).* Fifty-four patients from six clinics in Quebec, Canada, took part in COPD coaching based on the Living Well with COPD program. The educational intervention resulted in the progression of pre-bronchodilator forced expiratory volume values at the one-year follow-up. The number of additional antibiotic treatments has reduced significantly. An education program significantly promoted the patients' self-management skills and medication adherence. At the 1-year follow-up, only three patients (6%) had a good inhaler technique, but this number had increased significantly to 45(83%). At the end of the intervention (4–6 weeks), adherence to the inhalers increased from one-third to three-quarters of the participants, and it was maintained over a long time, from 4 months to a year.

The third study by *Jolly et al. (2018).* Nurses delivered a telephone health coaching intervention based on social cognitive theory to promote symptom management by proper medication use employing the St George's Respiratory Questionnaire (SGRQ-C). The intervention group participants showed elevated medication adherence at six months. There were substantial differences between experimental and control groups, in both pre-test and post-test follow-up evaluations. There were substantial differences between experimental and control groups, in both pre-test and post-test follow-up evaluations

The fourth study was case control conducted by *Ozturk et al. (2020)* in Turkey. Sixty-one patients with COPD were randomized into two groups: self-management training (n=31) and standard care (n=30). All participants were evaluated using the COPD assessment test (CAT) and St George's Respiratory Questionnaire (SGRQ) to assess self-management. As a result of this study, a statistically significant improvement in symptom management was observed in patients who received self-management training and educational sessions. In addition, the results showed a significant improvement in the experimental group, from pre-test to post-test, and follow-up evaluation, in response to weather and environment.

5.4. Effect of self-management education on emotional management

Anxiety and depression are the comorbidities that may develop in the clinical course of COPD *(Öztürk et al., 2020).* As a result of this review, three out of ten articles examined the effect of health education on the emotional management of patients with COPD. The first study was performed by *Ng and Smith (2017)* in China. There was significant difference between the experimental and control groups regarding emotional management in any subscales or total CSES scores.

Ozturk et al. (2020) conducted the second study in Turkey. As a result of their study, there was more improvement in psychological and emotional management among the self-management training group than in the control group. The third study reported no significant improvement in emotional management; this study was a randomized controlled trial conducted by *Bringsvor et al. (2018)* in Norway. A total of 182 patients with COPD were assigned to an experimental group providing Better Living with COPD with regular care and a control group receiving regular care. The outcome of this research showed that no significant changes occurred in participants' emotional management, one of the self-management domains, when tested using the Health Education Impact Questionnaire (heiQ).

6. Discussion

The current review adds to the existing body of evidence regarding the effect of health educational guidelines on self-management among patients with COPD and supports the findings of previous studies. The current scoping review aimed to identify empirical evidence related to the effect of health education on patients with the chronic obstructive pulmonary disease to improve self-management practices and identify gaps in nursing literature regarding this topic. The findings of this review suggest that patients who received health education on self-management had lower anxiety, depression, and unscheduled physician visits, as well as improved symptom management, physical activity, emotional management, and self-efficacy.

Among the ten studies examined, eight were randomized controlled trials, one was quasi-experimental, and one was prospective case-control. They all evaluated the influence of education on self-management in patients with COPD. Most studies on self-management programs had positive findings and highlighted patient improvements. The health education guidelines had several components that

contributed to the positive results. The evidence for health educational guidelines resulted in significant self-management improvements. Adequate self-management improves patients' ability to control the disease by enabling them to change its severity, adapt to inhalation techniques and devices, and make behavioral changes *(Jolly et al., 2016).*

Billington et al. (2015) stated that the central components of self-management education for patients with COPD include knowledge of COPD, breathing exercises, exacerbation management, proper medication usage, and healthy lifestyles. This review found that self-management education improved self-efficacy. *Poureslami et al. (2016)* found that self-efficacy was important in determining which practices and behaviors patients perform or avoid. It is thus essential to increase patients' ability to follow doctors' advice and practices of self-management. Incorporating health education guidelines into self-management treatments for patients with COPD may assist patients in responding to evolving symptoms and making appropriate self-management decisions *(Effing et al., 2016).*

Self-management education had a strong positive impact on variables such as health status and physical activity in the intervention groups compared to the control groups in studies assessing physical activity. *Chang & Dai, (2019); Park et al. (2020); Jolly et al. (2018); Ng & Smith (2017); Billington et al. (2015)* found that self-management education that included components of exercise training or exercises discussion or recommendation strongly impacted physical activity in the intervention group compared with the control group.

Ozturk et al. (2020) found that the intervention group's physical activity and symptom management improved after implementing a structured education program. *Ozturk* also found that, based on the outcome measure employed to determine the effect of education on symptoms, a significant improvement in symptom management in the self-management training group was observed compared with the standard care group. *Poureslami et al. (2016)* found that educational intervention improved medication adherence and self-management practices, improving patient capacity to manage COPD exacerbations. *Chang & Dai (2019)* found that, according to the generalized estimating equation used in their study, the score for symptom severity in the group receiving self-management education was statistically significantly lower than the control group. *Jolly et al. (2018)* noted that six months after a self-management education intervention, patients of an experimental group stated improved medication adherence, with a statistically significant increase in the percentage reporting an inhaler examination in the previous six months, indicating improved symptom management. Another study by *Aboumatar et al. (2018)* revealed that the intervention group demonstrated improved symptom self-management after participating in a hospital-initiated program delivered by nurses compared with the control group who received usual care.

In addition, patients with COPD highly value emotional and psychological support provided through self-management interventions. Two studies included in this scoping review, *Ng & Smith (2017); Ozturk et al. (2020)* examined the effect of self-management education on emotional distress and reported that self-management education had a strong effect on emotional and psychosocial health in the intervention group compared with the control group. *Ng & Smith (2017)* indicated that educating patients on social coping methods reduced emotional distress and improved psychological well-being. The high prevalence of emotional distress in these patients indicates that psychological support should be emphasized, and outcome measures should be reliable and sensitive to the intervention's content.

Furthermore, the sense of security offered by nurse interaction is important to patients' psychological well-being, and the patient's ability to self-manage depends on effective access to professional guidance and treatment. *Ozturk et al. (2020)* stated that anxiety and depression are comorbidities that may increase the risk of COPD exacerbation. Another study by *Wang (2018)* found improved emotional self-management practices in the intervention group after participating in a health coaching program compared with the control group.

Future research should concentrate on these specific topics when developing self-management education guidelines. Furthermore, it should be remembered that nurses may need to use individualized support measures for each patient, as standardized methods may not be suitable for all patients. In addition, nurses play a significant role in self-management education, particularly in long-term care programs, as part of a multidisciplinary team that includes the general practitioner, physiotherapist, nurse, social worker, and psychologist. *Billington et al. (2015)* stated that nurses have essential responsibilities in education of patients experienced pulmonary disease, including producing content for specific education programs, educating patients in deep-breathing exercises and exacerbation management, observing disease signs, and expanding patients' illness awareness.

7. Conclusion

This scoping review found that health educational guidelines consider an important need to improve self-management practices. Self-management education can improve patients' health outcomes such as self-efficacy, symptom management, physical activity and emotional health, thus should be considered an essential component of the overall management of COPD.

8. Recommendations

In reviewing the literature, it is essential to implement health education to measure the effect on patients with COPD. This review results may be utilized to direct health care providers to educate patients with COPD and their families on pharmacological and non-pharmacological treatments and inspire future research to examine the effect of education on different aspects of COPD patients' needs. This study finding may help the nurses to determine the

importance of health education in improving self-management practices among patients with COPD.

9. References

Aboumatar, H., Naqibuddin, M., Chung, S., & Chaudhry, H. (2019). Effect of a Hospital-Initiated Program Combining Transitional Care and Long-term Self-management Support on Outcomes of Patients Hospitalized with Chronic Obstructive Pulmonary Disease: A Randomized Clinical Trial. JAMA The Journal of the American Medical Assocaition, 322(14), 1371. https://doi.org/ 10.1001/jama.2019.11982.

Alqahtani, J. S., Oyelade, T., Aldhahir, A. M., Alghamdi, S. M., Almehmadi, M., Alqahtani, A. S., Quaderi, S., Mandal, S., & Hurst, J. R. (2020). Prevalence, severity, and mortality associated with COPD and smoking in patients with COVID-19: A rapid systematic review and meta-analysis. *PloS one*, *15*(5), e0233147 . https://doi.org/10.1371/journal.pone.0233147.

Alsubaiei, M. E., Cafarella, P. A., Frith, P. A., McEvoy, R. D., & Effing, T. W. (2018). Factors influencing the management of chronic respiratory diseases in general and chronic obstructive pulmonary disease in particular in Saudi Arabia: An overview. *Annals of thoracic medicine*, *13*(3), 144 .

Alsubaiei, M., Frith, P., Cafarella, P., Quinn, S., Al Moamary, M., McEvoy, R., & Effing, T. (2017). COPD care in Saudi Arabia: Physicians' awareness and knowledge of guidelines and barriers to implementation. *The International Journal of Tuberculosis and Lung Disease*, *21*(5), 592-595 . https://doi.org/10.5588/ijtld.16.0656.

Arksey, H., & O'Malley, L. (2005). Scoping studies: Towards a methodological framework. *International Journal of Social Research Methodology*, *8*(1), 19–32. https://doi.org/10.1080/1364557032000119616.

Barker, D. I., & Barker, M. (2013). *Internet research illustrated. Cengage Learning;* 7th ed. https://www.amazon.com/Internet-Research-Illustrated-Donald-Barker/dp/1285854128.

Bestall, J. C., Paul, E. A., Garrod, R., Garnham, R., Jones, P. W., & Wedzicha, J. (1999). Usefulness of the Medical Research Council (MRC) dyspnoea scale as a measure of disability in patients with chronic obstructive pulmonary disease. *Thorax*, *54*(7), 581-586. https://doi.org/10.1136/thx.54.7.581.

Billington, J., Coster, S., Murrells, T., & Norman, I. (2015). Evaluation of a nurse-led educational telephone intervention to support self-management of patients with chronic obstructive pulmonary disease: A randomized feasibility study. *COPD: Journal of Chronic Obstructive Pulmonary Disease*, *12*(4), 395-403 . https://doi.org/10.3109/15412555.2014.974735.

Bourbeau, J., Farias, R., Li, P. Z., Gauthier, G., Battisti, L., Chabot, V., Beauchesne, M. F., Villeneuve, D., Coˆte, P., & Boulet, L. P. (2018). The Quebec respiratory health education network: Integrating a model of self-management education in COPD primary care. *Chronic respiratory disease*, *15*(2), 103-113 . https://doi.org/10.1177/1479972317723237.

Bringsvor, H. B., Langeland, E., Oftedal, B. F., Skaug, K., Assmus, J., & Bentsen, S. B. (2018). Effects of a COPD self-management support intervention: A randomized controlled trial. *International Journal of Chronic Obstructive Pulmonary Disease*, *13:*3677-3688. https://doi.org/10.2147/COPD.S181005.

Cai, L., Wang, X.-M., Fan, L.-M., Shen, J.-R., Liu, Y.-N., & Golden, A. R. (2020). Socioeconomic variations in chronic obstructive pulmonary disease prevalence, diagnosis, and treatment in rural Southwest China. *BMC Public Health*, *20*(1), 536. https://doi.org/10.1186/s12889-020-08687-5.

Casey, G. (2016). COPD: Obstructed lungs. *Kai Tiaki: Nursing New Zealand*, *22*(5), 20 . https://pubmed.ncbi.nlm.nih.gov/27514228/.

Chang, Y. Y., & Dai, Y. T. (2019). The efficacy of a flipping education program on improving self-management in patients with chronic obstructive pulmonary disease: a randomized controlled trial. *International Journal of Chronic Obstructive Pulmonary Disease*, *14*, 1239-1250. https://doi.org/10.2147/COPD.S196592 .

Effing, T. W., Vercoulen, J. H., Bourbeau, J., Trappenburg, J., Lenferink, A., Cafarella, P., Coultas, D., Meek, P., Van Der Valk, P., Bischoff, E. W., Bucknall, C., Dewan, N. A., Early, F., Fan, V., Frith, P., Janssen, D., Mitchell, K., Morgan, M., Nici, L., Patel, I., Walters, & Rice, K. L., Singh, S., Zuwallak, R., Benzo, R., Goldstein, R., Partridge, M. R., & van der Palen, J. (2016). Definition of a COPD self-management intervention: International expert group consensus. *European Respiratory Journal*, *48*(1), 46-54. https://doi.org/ 10.1183/13993003.00025-2016.

Giese-Davis, J., Koopman, C., Butler, L. D., Joss, J., Classen, C., Roberts, J., Rosenbluth, R., Morrow, G. R., & Spiegel, D. (2004). The Stanford Emotional Self-Efficacy Scale—Cancer: Reliability, validity, and generalizability. *In I. Nyklíček, L. Temoshok, & A. Vingerhoets (Eds.), Emotional expression and health: Advances in theory, assessment and clinical applications (pp. 204–221). Brunner-Routledge.*

Hagströmer, M., Oja, P., & Sjöström, M. (2006). The International Physical Activity Questionnaire (IPAQ): A study of concurrent and construct validity. *Public Health Nutrition*, *9*(6), 755-762. https://doi.org/10.1079/phn2005898.

Hillebregt, C. F., Vlonk, A. J., Bruijnzeels, M. A., van Schayck, O. C., & Chavannes, N. H. (2016). Barriers and facilitators influencing self-management among COPD patients: a mixed methods exploration in primary and affiliated specialist care. *International Journal of Chronic Obstructive Pulmonary Disease*, *12*, 123–133. https://doi.org/10.2147/COPD.S103998.

Helvaci, A., & Gok Metin, Z. (2020). The effects of nurse-driven self-management programs on chronic obstructive pulmonary disease: A systematic review and meta-analysis. *Journal of Advanced Nursing*, *76*(11), 2849-2871. https://doi.org/10.1111/jan.14505.

Jolly, K., Majothi, S., Sitch, A. J., Heneghan, N. R., Riley, R. D., Moore, D. J., Bates, E. J., Turner, A. M., Bayliss, S. E., Price, M. J., Singh, S., Adab, P., Fitzmaurice, D., & Jordan, R. I. (2016). Self-management of health care behaviors for COPD: A systematic review and meta-analysis. *International Journal of Chronic Obstructive Pulmonary Disease*, *11*, 305-26. https://doi.org/10.2147/COPD.S90812.

Jolly, K., Sidhu, M. S., Hewitt, C. A., Coventry, P. A., Daley, A., Jordan, R., Heneghan, C., Singh, S., Ives, N., Adab, P., Jowett, S., Varghese, J., Nunan, D., Ahmed, K., Dowson, L., & Fitzmaurice, D. (2018). Self-management of patients with mild COPD in primary care: Randomized controlled trial. *BMJ*, *361*, k2241. https://doi.org/10.1136/bmj.k2241.

Jones, P. W., Quirk, F. H., & Baveystock, C. M. (1991). The St George's Respiratory Questionnaire. *Respiratory medicine*, *85*, 25-31. https://doi.org/10.1016/s0954-6111(06)80166-6.

Jones, P., Harding, G., Berry, P., Wiklund, I., Chen, W., & Leidy, N. K. (2009). Development and first validation of the COPD Assessment Test. *European Respiratory Journal*, *34*(3), 648-654 . https://doi.org/10.1183/09031936.00102509.

Lenferink, A., Brusse-Keizer, M., van der Valk, P. D., Frith, P. A., Zwerink, M., Monninkhof, E. M., van der Palen, J., & Effing, T. W. (2017). Self-management interventions including action plans for exacerbations versus usual care in patients with chronic obstructive pulmonary disease. Cochrane Database of Systematic Reviews. *8*(8), CD011682. https://doi.org/10.1002/14651858.CD011682.pub2.

López-Campos, J. L., Tan, W., & Soriano, J. B. (2016). Global burden of COPD. *Respirology*, *21*(1), 14-23 . https://doi.org/10.1111/resp.12660.

Mahboub, B. H., Vats, M. G., Al Zaabi, A., Iqbal, M. N., Safwat, T., Al-Hurish, F., Miravitlles, M., Singh, D., Asad, K., & Zeineldine, S. (2017). Joint statement for the diagnosis, management, and prevention of chronic obstructive pulmonary disease for Gulf Cooperation Council countries and Middle East–North Africa region, 2017. *International Journal of Chronic Obstructive Pulmonary Disease*, *12*, 2869. https://doi.org/10.2147/COPD.S136245.

Melnyk, B. M., & Fineout-Overholt, E. (2010). *Evidence-based practice in nursing & healthcare: A guide to best practice*. 2nd ed. Lippincott Williams & Wilkins. https://www.amazon.com/Evidence-Based-Practice-Nursing-Healthcare-Guide/dp/1605477788.

Moher, D., Liberati, A., Tetzlaff, J., Altman, D. G., & The, P. G. (2009). Preferred Reporting Items for Systematic Reviews and Meta-Analyses: The PRISMA Statement. *PLOS Medicine*, *6*(7), e1000097 . https://doi.org/10.1371/journal.pmed.1000097.

Ng, W. I., & Smith, G. D. (2017). Effects of a self-management education program on self-efficacy in patients with COPD: A mixed-methods sequential explanatory designed study. *International Journal of Chronic Obstructive Pulmonary Disease*, *12*, 2129 . https://doi.org/10.2147/COPD.S136216.

Nurash, P., Kasevayuth, K., & Intarakamhang, U. (2020). Learning programmes and teaching techniques to enhance oral health literacy or patient-centred communication for healthcare providers: A systematic review. *European Journal of Dental Education*, *24*(1), 134-144. https://doi.org/10.1111/eje.12477.

Öztürk, B. Ö., Alpaydın, A. Ö., Özalevli, S., Güler, N., & Cimilli, C. (2020). Self-management training in chronic obstructive lung disease improves the quality of life. *Turkish Thoracic Journal*, *21*(4), 266-273. https://doi.org/10.5152/TurkThoracJ.2019.19015.

Park, S. K., Bang, C. H., & Lee, S. H. (2020). Evaluating the effect of a smartphone app-based self-management program for people with COPD: A randomized controlled trial. *Applied Nursing Research*, *52*, 151231. https://doi.org/10.1016/j.apnr.2020.151231.

Poureslami, I., Kwan, S., Lam, S., Khan, N. A., & FitzGerald, J. M. (2016). Assessing the effect of culturally specific audiovisual educational interventions on attaining self-management skills for chronic obstructive pulmonary disease in Mandarin-and Cantonese-speaking patients: A randomized controlled trial. *International Journal of Chronic Obstructive Pulmonary Disease*, *11*, 1811-22. https://doi.org/10.2147/COPD.S105408.

Putra, A. P., Kusnanto, K., & Yuwono, S. R. (2020). Effects of job satisfaction and organizational commitment on nurse retention: A systematic review. *Indonesian Nursing Journal of Education and Clinic (INJEC)*, *5*(2), 197-205. http://dx.doi.org/10.24990/injec.v5i2.319.

Sánchez-Nieto, J. M., Andújar-Espinosa, R., Bernabeu-Mora, R., Hu, C., Gálvez-Martínez, B., Carrillo-Alcaraz, A., Álvarez-Miranda, C. F., Meca-Birlanga, O., & Abad-Corpa, E. (2016). Efficacy of a self-management plan in exacerbations for patients with advanced COPD. *International Journal of Chronic Obstructive Pulmonary Disease*, *11*, 1939–1947. https://doi.org/10.2147/COPD.S104728.

The Joanna Briggs Institute (2015). The Joanna Briggs Institute reviewers' manual 2015 methodology for JBI scoping reviews. *The Joanna Briggs Institute. https://nursing.lsuhsc.edu/JBI/docs/ReviewersManuals/Scoping.-pdf* .

Tufanaru, C., Munn, Z., Aromataris, E., Campbell, J., & Hopp, L. (2017). Systematic reviews of effectiveness. *Joanna Briggs Institute reviewer's manual*, *3*. https://doi.org/10.46658/JBIRM-17-03

Van der Molen, T., Willemse, B. W., Schokker, S., Ten Hacken, N. H., Postma, D. S., & Juniper, E. F. (2003).

Development, validity and responsiveness of the clinical COPD questionnaire. *Health and quality of life outcomes*, *1*(1), 1-10. https://doi.org/10.1186/1477-7525-1-13.

Varmaghani, M., Dehghani, M., Heidari, E., Sharifi, F., Moghaddam, S. S., & Farzadfar, F. (2019). Global prevalence of chronic obstructive pulmonary disease: Systematic review and meta-analysis. *East Mediterr Health J.*, *25*(1), 47-57. https://doi.org/10.26719/emhj.18.014.

Wang, L., Mårtensson, J., Zhao, Y., & Nygårdh, A. (2018). Experiences of a health coaching self-management program in patients with COPD: A qualitative content analysis. *International Journal of Chronic Obstructive Pulmonary Disease*, *13*, 1527 .https://doi.org/10.2147/COPD.S161410.

Weldam, S. W., Schuurmans, M. J., Zanen, P., Heijmans, M. J., Sachs, A. P., & Lammers, J. W. J. (2017). The effectiveness of a nurse-led illness perception intervention in COPD patients*:* A cluster randomized trial in primary care. *ERJ Open Research*, *3*(4), 00115-2016. https://doi.org/10.1183/23120541.00115-2016.

Wigal, J. K., Creer, T. L., & Kotses, H. (1991). The COPD self-efficacy scale. *Chest*, *99*(5), 1193-1196. https://doi.org/10.1378/chest.99.5.1193.

Woldeamanuel, G. G., Mingude, A. B., & Geta, T. G. (2019). Prevalence of chronic obstructive pulmonary disease (COPD) and its associated factors among adults in Abeshge District, Ethiopia: A cross-sectional study. *BMC Pulmonary Medicine*, *19*(1), 181. https://doi.org/10.1186/s12890-019-0946-z.

World Health Organization. (2017). Chronic obstructive pulmonary disease (COPD). https://www.who.int/news-room/fact-sheets/detail/chronic-obstructive-pulmonary-disease-(copd). Accessed 25 June 2019.

World Health Organization. (2020). Chronic obstructive pulmonary disease (COPD). https://www. who.int/news-room/fact-sheets/detail/chronic-obstructive-pulmonary-disease-(copd).

World Health Organization (2022). Chronic Obstructive Pulmonary disease. Key facts. https://www.who.int/news-room/fact-sheets/detail/chronic-obstructive-pulmonary-disease-(copd)

Yadav, U. N., Lloyd, J., Hosseinzadeh, H., Baral, K. P., Bhatta, N., & Harris, M. F. (2020). Self-management practice associated factors and its relationship with health literacy and patient activation among multi-morbid COPD patients from rural Nepal. *BMC Public Health*, *20*(1), 300. https://doi.org/10.1186/s12889-020-8404-7.

Yan, J., Wang, L., Liu, C., Yuan, H., Wang, X., Yu, B., & Luo, Q. (2016). Effect of a hospital outreach intervention program on decreasing hospitalizations and medical costs in patients with chronic obstructive pulmonary disease in China: Protocol of a randomized controlled trial. *BMJ Open*, *6*(6), e009988 https://doi.org/10.1136/bmjopen-2015-009988.

Yang, H., Wang, H., Du, L., Wang, Y., Wang, X., & Zhang, R. (2019). Disease knowledge and self-management behavior of COPD patients in China. *Medicine*, *98*(8), e14460. https://doi.org/10.1097/MD.0000000000014460.

Zigmond, A. S., & Snaith, R. P. (1983). The hospital anxiety and depression scale. *Acta psychiatrica scandinavica*, *67*(6), 361-370. https://doi.org/10.1111/j.1600-0447.1983.tb09716.x.

Table (2): COPD self-management matrix

No.	Author/years	Aim	Method	Intervention used	Sample /sitting	Tool	Findings
1	Jolly et al. (2018) England	To evaluate the effectiveness of telephone health coaching delivered by a nurse to support self-management in a primary care population with mild symptoms of chronic obstructive pulmonary disease (COPD).	A multicentre randomized controlled trial.	Telephone-provided verbal information and advice.	Five hundred seventy-seven patients from four areas of England located in Birmingham and West Midlands South, Greater Manchester, West Midlands North, and Oxfordshire.	- "Health-related quality of life" used the St George's Respiratory Questionnaire (SGRQ-C). - Modified Medical Research Council dyspnea scale (MRC). - International Physical Activity Questionnaire. - Hospital Anxiety and Depression Scale - Stanford self-efficacy scale	- There was no difference in SGRQ-C (P=0.23). - Intervention group reported greater physical activity (44% v 30%), rescue packs of antibiotics (37% v 29%), and inhaler use technique check (68% v 55%). - No differences between the two groups on the Stanford self-efficacy scale.
2	Ng and Smith (2017) China	To evaluate the effectiveness of a specifically designed SMEP on levels of self-efficacy in Chinese patients with COPD.	An exploratory phase randomized controlled trial. This study used two groups and a pre-post follow-up test comparison.	- Written material consisting of health educational guidelines. - Educational sessions comprising presenting and practicing workshops. - This study used two group, pre/post-test comparisons.	Fifty patients were divided into an experimental and control group from one of the two largest hospitals in Macau and three community care centers.	- "Self-efficacy" using the COPD Self efficacy Scale (CSES). - Modified Medical Research Council dyspnea scale (MRC)	- There were substantial differences between experimental and control groups, in both pre-test and post-test follow-up evaluations According to Wilcoxon signed-rank tests, the study showed a significant improvement in the total scale of COPD Self Efficacy Scale (CSES) (p=0.015) and subscales of CSES regarding the intense emotional arousal (p=0.01), physical exertion (p =0.01), and response to weather/environment from baseline to post-test follow-up evaluation in experimental group.
3	Chang and Dai (2019) Taiwan	To examine a flipping education program's efficacy in improving self-management in patients with COPD.	Single-blinded, randomized controlled trial	Written material consisting of health educational guidelines	Sixty participants were recruited from medical centers in northern Taiwan.	- Chronic Obstructive Pulmonary Disease Knowledge Questionnaire (COPD-Q). - COPD Assessment Test (CAT). - Modified Medical Research Council dyspnea scale (MRC)	The intervention group had significant improvement in disease knowledge (p<0.05), self-efficacy (p<0.01), and activation level (p<0.01) compared with the control group.

No.	Author/years	Aim	Method	Intervention used	Sample /sitting	Tool	Findings
4	Billington et al. (2015) UK	To investigate the feasibility of introducing a nurse-led educational telephone intervention for patients with chronic obstructive pulmonary disease (COPD) to reinforce their understanding and use of their self-management plan.	Randomized, two-armed feasibility study	Telephone-provided verbal information and advice	Seventy-three patients in a single General Practice in Greater London.	- COPD assessment test CAT (self-reported) visits to A&E department or hospital admission; and self-reported number of exacerbations in the previous three months was assessed.	- CAT scores decreased significantly, which indicates improvement in self-management (Time 1 = 15.56 vs. 12.44 at Time 2) in self-management. - No significant change in exacerbations. - They found that the scores of symptom management for patients with COPD in the intervention group had improved after receiving self-management education, which is considered a clinically significant change
5	Bringsvor et al. (2018) Norway	To examine the effects of the COPD-specific health promoting self-management intervention "Better living with COPD" on different self-management-related domains, self-efficacy, and sense of coherence.	, randomized controlled design	Written material consisting of health educational guidelines	There were 182 patients with COPD from 11 municipalities on the west coast of Norway.	- Self-efficacy assessment used General Self-Efficacy Scale (GSES). - The 13-item Sense of Coherence Scale (SOC-13). - Health Education Impact Questionnaire (heiQ).	- The analysis showed significant positive changes in constructive attitudes, approaches, skill, and technique acquisition in the intervention group compared with the control group. - Self-monitoring and insight (heiQ) showed significant positive change (P=0.049) in the intervention group compared with the control group. - No significant changes between groups on the other self-management domains, self-efficacy, or SOC (SOC-13).
6	Sánchez-Nieto et al. (2016) Spain	To assess the efficacy of an intervention called the self-management program on the need for hospital care due to disease exacerbation in patients with advanced COPD.	Multicenter randomized study	Written material consisting of health educational guidelines	Ninety-six patients from two hospitals (Hospital Morales Meseguer for the health area VI and Hospital Arrixaca for the health area I) in Spain	- Modified Medical Research Council dyspnea scale (MRC). - Quality of life" assessment used (CAT). - Social-risk questionnaire	- The rate of COPD exacerbations with visits to A & E or hospitalization had decreased from 1.37 to 0.89 (P=0.04) in the intervention group compared with the control group. - The number of exacerbations dropped from 52 to 42 in the patients who received the intervention compared with the control group.
7	Park et al. (2020) Korea	To examine the effect of a 6-month, smartphone app-based self-management program for people with chronic obstructive pulmonary disease (COPD).	A randomized controlled trial. This study used a comparison between different measurement times.	Smartphone app-based self-management program	A total of 44 patients were recruited in pulmonary medicine outpatient clinics at two metropolitan, tertiary care, and academic hospitals.	- The University of California, San Diego Shortness of Breath Questionnaire (UCSD-SOBQ). - Self-Efficacy for Chronic Disease 6-Item Scale.	- Significant differences between the two groups were found in change scores for self-care behavior and time spent in physical activity. - The experimental group improved in maintaining exercise, raising physical activity levels, and decreasing sedentary time compared with the control group.

No.	Author/years	Aim	Method	Intervention used	Sample /sitting	Tool	Findings
8	Poureslami et al. (2016) China	To develop and assess the effectiveness of culturally and linguistically specific audiovisual educational materials in supporting self-management practices in Mandarin- and Cantonese-speaking patients.	Randomized controlled trial	Written material consisting of health educational guidelines	A total of 91 patients from outpatient respiratory clinics.	- The primary outcome is "self-efficacy" using COPD Self-Efficacy Scale. - The secondary outcome was "improved patient understanding of Pulmonary Rehabilitation" using Bristol COPD Knowledge Questionnaire.	Subjects showed improvements in inhaler technique (p=0.001), managing COPD exacerbation (p=0.01), ability to achieve goals in managing COPD (p=0.01), and understanding pulmonary rehabilitation procedures (p=0.05) in all three groups compared with one control group.
9	Öztürk et al. (2020) Turkey	To examine the effect of self-management training on the quality of life and functional parameters in patients with moderate to severe COPD.	Case-control. This study uses a pre/post-test design in addition to the study/control group design.	Educational sessions comprised presenting and practicing workshops.	Sixty-one patients with COPD were randomized into two groups: Self-management training (n=31) and standard care (n=30) at the pulmonary disease's outpatient clinic.	- Measure the degree of breathlessness, using Modified Medical Research Council (mMRC) Scale. - Assess the health status impairment in COPD used (CAT). - Self-reported scale used St George's Respiratory Questionnaire. - Hospital anxiety and depression scale.	- There was a statistically significant decrease in CAT p<0.001, SGRQ impact p=0.013, SGRQ activity p=0.001, SGRQ total scores p=0.020, and HADS anxiety p=0.012 and depression scores p=0.014 in the self-management training group compared with standard care group. - . There were substantial differences between experimental and control groups, in both pre-test and post-test follow-up evaluations - A statistically significant improvement in symptom management was observed in patients who received self-management training and educational sessions. - The results showed a significant improvement in the experimental group, from baseline to post-test follow-up evaluation, in response to weather and environment.
10	Bourbeau et al. (2018) Canada	To evaluate whether a chronic obstructive pulmonary disease (COPD) self-management education program with the coaching of a case manager improves patient-related outcomes and leads to practice changes in primary care.	Quasi-experimental Pre/post-test design.	Written material consisting of health educational guidelines	A total of 54 patients were in six family medicine clinics.	- Health-related quality of life (HRQL). - Assess the baseline using the COPD assessment test (CAT). - Knowledge assessment used Bristol COPD Knowledge Questionnaire (BCKQ). - Modified Medical Research Council dyspnea scale (MRC)	Significant improvement in: HRQL (p<0.0001), Treatment adherence (p<0.025), Inhaler technique (p<0.0001), COPD knowledge (p<0.001) in the patients after receiving education compared with a baseline assessment.