Review Article

IJNHS

Home-based supportive, rehabilitative, and Palliative care therapy (HAPPY) for COPD Patients in the community setting: A Rapid Review

Rosalia Firdaus[1], Khadijah Fatiya Adnurrahman[2], Salwa Mawaddah[3], Hana Rizmadewi Agustina[4]

[1,2,3]Faculty of Nursing, Universitas Padjadjaran
[4]Department of Fundamental Nursing, Faculty of Nursing, Universitas Padjadjaran

Article information

Article history:
Received; December 30th, 2021
Revised: January 27th, 2022
Accepted: February 10th, 2022

Corresponding author:
Hana Rizmadewi Agustina
Address: Kompleks Buah Batu Regency F2-5 Kota Bandung, Jawa Barat
E-mail:
hana.rizmadewi@unpad.ac.id

International Journal of Nursing and Health Services (IJNHS)
Volume 5, Issue 1, February 20th, 2022
http://doi.org/10.35654/ijnhs.v5i1.
E-ISSN: 2654-6310

Abstract

Introduction: Chronic Obstructive Pulmonary Disease (COPD) is one of the non-communicable diseases caused by air pollution and is included in the world's top 10 causes of death. **Objective:** This literature review aims to identify interventions to improve the quality of life of COPD patients through the application of HAPPY (Home-bAsed Supportive, Rehabilitative, and Palliative Care TheraPY) The method used is a rapid review by searching for articles in four databases of Garuda, NCBI, NIH, and PubMed. The study reviewed was quantitative in English and Indonesian in adult patients with Obstructive Pulmonary Disease. **Results:** it found several interventions, namely self-management, pursed-lip breathing exercise, self-care education, and family support. The management of complementary therapies based on home care has improved the health and quality of life of COPD patients. **Conclusion:** Both available treatments can be carried out for COPD patients, hospital-based management and home care therapy can be carried out to improve the quality of life of COPD patients with technological advances that are proven to facilitate complementary medicine, with an interdisciplinary approach to the management of COPD comprehensively. **Recommendation:** Further study needs to discuss the effectiveness of home care-based COPD management and compare the effectiveness of COPD care in hospitals and at home.

Keywords: chronic obstructive pulmonary disease, complementary therapy, home care, palliative care, rehabilitative care

INTRODUCTION

Chronic Obstructive Pulmonary Disease (COPD) is one of the diseases caused by exposure to air pollution too often, a chronic lung disease characterized by airflow barriers in the respiratory tract that are progressively conversive or reversible in part (1). The 2015 statistics report stated that the mortality rate due to COPD globally touched 3.17 million or 5% of the total deaths in the year (2). Meanwhile, The Global Burden of Disease reported a global prevalence of COPD in 2016 of 251 million. The World Health Organization (WHO) further identified that 90% of COPD deaths occur in lower-middle-income countries. Based on the Basic Health Research or Riskesdas 2013, the prevalence of COPD patients in Indonesia in 2013 was 3.7% (3). In Indonesia alone, the highest prevalence of COPD is in East Nusa Tenggara (10.0%), followed by Central Sulawesi (8.0%), West Sulawesi, and South Sulawesi, each 6.7%. Prevalence of COPD in West Java by 4.0%10 (4).

The problems caused by COPD are very complex and can be said to be the burden of disease (burden of disease). Sufferers bear the burden of the disease until the end of their lives. It can interfere with the sustainability of their daily lives and reduce the quality of life in both the individual and family as part of society (5). The character of COPD is chronic and progressive and has a negative influence and prognosis on the decline in the patient's quality of life (6). The quality of life of COPD patients is known to decrease if it is characterized by the degree of disease and severe shortness of breath (7). The quality of life of COPD patients can be a picture of the burden on patients due to the condition they are suffering from and can be an illustration of the extent to which the patient's ability to carry out daily activities well (8). Therefore, it is crucial to improve the quality of life of COPD patients. Supportive and rehabilitative care is a form of health service that aims to treat a disease, provide continuous care, and prevent other problems. This health service can be done at home (home care).

Home care can be an alternative for patients with conditions that do not allow them to take to the hospital (lack of funds, long distances, et cetera) and for patients who are reluctant to go to the hospital for treatment. Home care can also be follow-up care for inpatients with discharge planning from the hospital, where nurses then carry out this program and other health teams tasked with handling home care (9). In implementing home care, palliative care can also provide, aiming to improve patients, families, and caregivers (10). However, home care is more desirable for most patients because they can be cared for by family and spend the remaining lifetime with those closest to them and not be restricted, as in hospitals (11). In a study conducted to describe the quality of palliative services at home, it was found that the group receiving the palliative intervention had a higher score (p = 00.6). Home care-based interventions are provided in psychosocial support, breathing exercises, and treatment decisions, which positively impact the patient's quality of life (12). So that home care-based palliative services are a good choice for patients and families in managing patients with COPD to improve their quality of life.

Complementary therapy can also complement health services available at home to improve the patient's psychological, social and spiritual condition. Complementary therapies for COPD can be in the form of oxygen therapy and self-management, physical activity exercises, pursed-lip breathing exercises, self-care education, and family support (13). The positive impact of implementing complementary therapy is improving the quality of life of COPD patients (14). In addition, complementary therapies also do not cost much and can be done at home. The development of the use of the internet is also followed by the development of health and nursing today. The emergence of telemedicine, telehealth, and telenursing has become an alternative to overcome health problems without the time and distance constraints (15).

OBJECTIVE

In this case, this review aims to determine effective rehabilitative and palliative care that can be used in health services to optimize the quality of life of COPD patients. HAPPY (Home-based supportive, rehabilitative, and Palliative care therapy) management in COPD patients aims to optimize the patient's quality of life efficiently and cost-effectively.

METHODS

Design

The study design used in this literature is a rapid review, a variation of a systematic review that balances time constraints with considerations in bias with the quick review method developed by Grant and Booth in 2009 (16). Limitations in the rapid study are the research period that is not too long (< 1 - 6 months), excluding articles or literature that not commercially published, in the literature search process using limits such as year and language, and the results of the review in the form of a descriptive summary.

Search Strategy

The authors conducted several search processes to gain relevant articles on palliative care using complementary home care-based therapies in COPD patients. During the search process, the authors use several keywords, such as; "Chronic Obstructive Pulmonary Disease," AND "Complementary Therapy," AND "Home Based Care," AND "Palliative Care," AND "Rehabilitative Care.". This study used four databases, including Garuda, NCBI, NIH, and PubMed.

Eligibility Criteria

The criteria of this research study were a full-text article in English and Indonesian, randomized control trial, and quasi-experiment research design within the last ten years of publication from 2012 – 2021 and focusing on adult patients with chronic obstructive pulmonary disease.

Selection Process and Item Data

All authors have completed the study selection process using the PRISMA Flow Diagram 2009 guide. Journal selection results are determined using keywords, validated against inclusion criteria and titles, evaluated by JBI for eligibility, and created the appropriate journal.

Data Extraction and Analysis

Data extraction is done manually based on the articles that have been obtained. The primary data from the reports received are the author and year of research, research design, research location, number and characteristics of the sample, interventions are given, and research results.

The PRISMA diagram in Figure 1 illustrates the article selection process according to the title and content of the research article and the research inclusion criteria, so 11 eligible articles were obtained.

Journal eligibility was assessed using The Joanna Briggs Institute Critical Appraisal. There are 13 assessment items for Randomized Controlled Trials and nine assessment items for Quasi-Experimental Studies. The synthesis of the data results is shown in table 1. A journal is feasible if it meets > 70% assessment

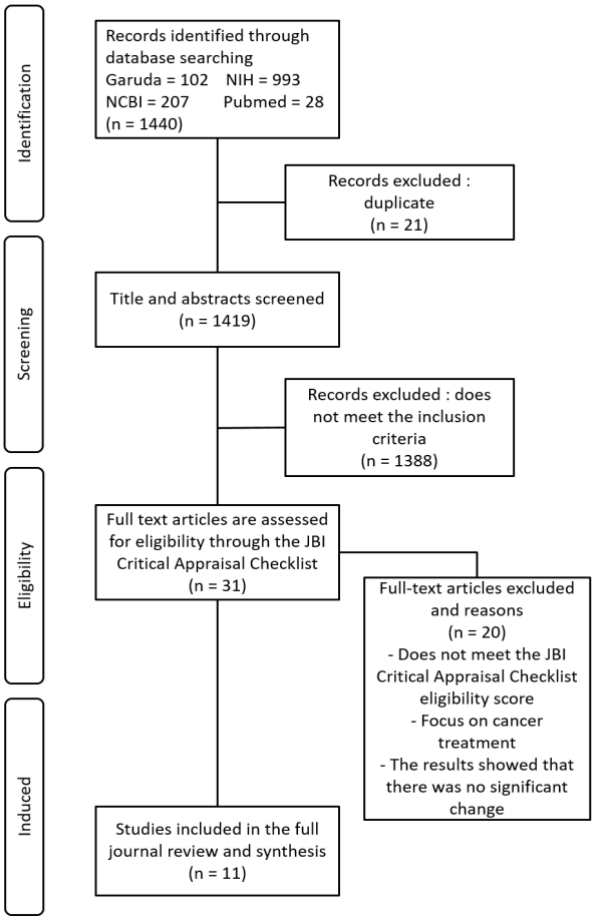

Figure 1. Feasibility & Inclusion Assessment Flowchart

RESULTS

It chose 11 journals based on the criteria and was assigned to conduct a review of non-pharmacological interventions (complementary therapy) to improve the quality of life of COPD patients. The 11 journal discusses non-pharmacological intervention with different approaches and innovations. According to the

study site, four journals were published in Indonesia, and seven more were published in the Netherlands, Denmark, Australia, Belgium, Germany, Portugal, and the United Kingdom. The 11 journals were released in 2014, 2015, 2016, 2017, and 2019. The journal is quantitative, with seven journals employing randomized controlled trials and four using quasi-experimental investigations. This study has a total of 1247 participants

Table 1. Assessment of the Quality of the Literature Reviewed

Author, Year	*JBI Critical Appraisal Checklist (The Joanna Briggs Institute 2017) %*	Literature Quality Assessment
Helen et al. (2014)	100% (13/13)	Good Quality
Rosyadi et al. (2019)	84,6% (11/13)	Good Quality
Hansen et al. (2017)	100% (13/13)	Good Quality
Wolfgang et al. (2017)	92,3% (12/13)	Good Quality
Farmer et al. (2017)	100% (13/13)	Good Quality
Marques et al. (2015)	84,6% (11/13)	Good Quality
Lonneke et al. (2019)	84,6% (11/13)	Good Quality
Charlotte et al. (2020)	76,9% (10/13)	Good Quality
Scholastica (2016)	88,8% (8/9)	Good Quality
Wijaya IK, et al. (2017)	88,8% (8/9)	Good Quality
Putu Wira (2017)	88,8% (8/9)	Good Quality

The reviewed journal discusses complementary therapies and pulmonary rehabilitation that can reduce dyspnea, increase physical and psychological resilience, increase knowledge, and improve the quality of life of COPD patients. In addition, several articles collaborate on complementary therapies with digital technology covered in a digital health application that further affects the patient's quality of life.

Theme 1: COPD Management at Home

Pulmonary rehabilitation carried out at home has beneficial effects: increasing exercise capacity, reducing dyspnoea, improving quality of life, and reducing cost-effectiveness that needs to be incurred by the patient (17). One method of pulmonary rehabilitation that can help minimize dyspnoea in COPD patients is pursed-lip breathing (PLB). PLB exercise in COPD patients can reduce lung hyperinflation by increasing intra-cavity channel pressure to prevent lung collapse. PLB exercise can also increase the speed of expiratory airflow, optimizing the exchange of carbon dioxide and oxygen, thereby reducing shortness of breath in COPD patients. After PLB exercise, the oxidation process in the body will be better. By increasing the function of the respiratory muscles (especially the diaphragm), the oxidation process in the body will be more optimal (18).

Physical activity tolerance in COPD patients can be overcome with PLB exercises combined with self-care education. Activity intolerance or limitation of physical activity in COPD patients is caused by decreased oxygen levels in the tissues, which can cause COPD patients to become tired and short of breath. Self-care theory and PLB exercises can increase oxygen intake in the lungs and body tissues. Increasing oxygen saturation with PLB exercise in COPD patients can increase energy in the body which is then metabolized into energy for carrying out activities (19). Giving PLB exercise before physical exercise in COPD patients can also help improve physical function. This exercise can enhance respiratory effectiveness by reducing air-trapping to increase tidal volume and improve respiratory control. PLB can increase breathing efficiency by increasing the ability to exhale, thereby decreasing the air left in the lungs (9).

The PLB method can also help increase oxygen saturation in COPD patients. Patients who regularly do this exercise can positively affect lung development. There is a difference in the average oxygen saturation of patients before and after PLB exercise. Before doing breathing exercises with the PLB technique, the average oxygen saturation of the respondents was 96.72%. After PLB, the oxygen saturation increased by 1.39 to 98.11% (20). PLB involves the process of forced expiration. PLB breathing in addition to forced expiration is also extended. Efforts to prolong expiration will prevent spontaneous exhalation of air, resulting in lung collapse or collapse. Thus, breathing using the PLB technique helps expel trapped air in COPD patients so that CO2 in the lungs can

be expelled. The expulsion of CO2 from the lungs provides an opportunity for O2 (oxygen) to fill the alveolar space even more because PLB exercises emphasize a solid and deep inspiration mechanism (21).

Increased self-management in COPD patients is also considered able to help in self-rehabilitating. Besides being useful in the rehabilitation process, self-management is also helpful in empowering COPD patients. Self-management education effectively increases empowerment in COPD patients, which consists of knowledge, attitudes, self-management actions, decision-making abilities, and self-efficacy. Conventional treatment alone is not enough to improve knowledge, disease management, quality of life, and smoking habits, and structured self-management education is needed to increase awareness and change lifestyle. Education about self-care can improve management and care and awareness of complications from COPD (22).

Theme 2: Telehealth for COPD patients

The study findings found several digital health techniques helpful in helping COPD patients, including online rehabilitation, using sElf-management anD support proGrammE (EDGE), and an intelligent mobile health tool. Studies found that online rehabilitation techniques can manage COPD (23). Conducting supervised online rehabilitation can be a helpful approach to improve the accessibility and compliance of COPD patients and reduce the risk of emergency department visits. Online rehabilitation is also beneficial for reducing anxiety and depression in COPD patients. It also can be a reminder for physical exercise such as walking so that the physical function of COPD patients will tend to be more stable (23). In this study, an intervention strategy for COPD patients' physical activity is objectively for six weeks six months where the patient must increase PA (physical activity) first before PR (pulmonary rehabilitation) to optimize treatment in COPD patients (24).

The self-management and support program (EDGE) uses a digital health system to support self-management support. The program provides overall benefits for patients to check their overall health status for a better future. The application at EDGE includes several components, starting from patient education materials, support exercises, self-care plans, remote symptom monitoring, and clinical parameters. Doctors can also provide feedback based on the interpretation of patient data via phone calls, texts, chats, or video calls. In clinical trials, it is known that this EDGE application does not provide significant results on the health status of COPD patients. However, this application can still monitor the overall health stats of patients (25).

A smart mobile health tool integrates smart mobile health to inform patients about changes in symptoms and physiological measurements such as pulse oximetry, spirometry, and body temperature measurement. This tool provides self-management that will automatically be adjusted to the patient's condition without the involvement of professionals so that patients can fill in how to manage themselves via a personal smartphone. Patients can also use the tool on their initiative to monitor changes in symptoms at any time of the day or night and receive advice from a smart mobile health tool (26).

Theme 3: Family Support for COPD Patients

Involving the family as part of the patient's rehabilitation care plan can improve COPD management. The group in which family members that provided psychosocial support by their families had significantly more significant changes in sexual relations (P=0.026) and psychological distress (P=0.033) than the control group (27). So that COPD patients do not experience symptoms of anxiety and depression due to the family support provided. Not only does it reduce anxiety and depression, but family support can also make COPD patients experience significant improvements in exercise, functional balance, knee extensor strength, and health-related quality of life (27).

Theme 4: Interprofessional Integrated Care for COPD Management

COPD management needs to involve many health professionals providing pharmacological and non-pharmacological therapy for optimal results. There is a trend towards an interdisciplinary approach to COPD management where team members from different disciplines work collaboratively, with a common goal, to set goals, make decisions,

and share resources and responsibilities. Integration is a means to improve access, quality, user satisfaction, and efficiency (28). The INTERdisciplinary COMmunity-based COPD management program (INTERCOM) consists of exercise training, education, nutritional therapy, and smoking cessation counseling by physiotherapists and community-based dietitians and nurses. It has been shown to improve patients' quality of life (17) significantly.

DISCUSSION

According to the review of eleven journals, physical and psychological non-pharmacological interventions, digital health systems, and integrated interprofessional care have a positive impact on the health of COPD patients, which can further improve the quality of life of COPD patients. Patients with COPD require supportive, palliative, and rehabilitative care in its management. Supportive care aims to support the patient and his family, increase the benefits of treatment, and reduce the effects of the disease. Palliative care aims to improve the quality of life and regard death as a normal process, not support or delay death, relieves pain and other disturbing complaints. Palliative care can maintain psychological and spiritual balance so that sufferers remain active until the end of life and help the atmosphere of grief in the family. This treatment should begin at the onset of symptoms and continue throughout treatment until death and grief (29).

Rehabilitative care is a psychological treatment for patients to continue doing positive things in their lives and overcome their health problems. This rehabilitation effort requires assistance from family members and community members to understand and understand their situation (former sufferers), making it easier for them (former sufferers) to adjust themselves in society with their current condition (30). Therefore, improving health status and the quality of life of COPD patients requires home-based supportive, palliative, rehabilitative care therapy that synergies between nurses, other health workers, and the patient's family.

Our studies found that COPD management can be done at home through assistance from the family using the family approach method. Home care is an essential part of improving quality nursing services and can be an option in health services 35 (Kemenkes RI, 2010). Home care is a continuous and comprehensive health service provided to individuals and families in their residence to increase, maintain or maximize the level of independence and minimize the consequences of disease (31). With the culture and habits of Indonesians who still adhere to a family-centered system, an approach to the family can potentially give good results in inpatient health (32). Therefore, if patients get help from their families, complementary care can be done correctly. Home care can be a reasonably good choice in providing fast and affordable health services, which will have a broad impact in improving services to affect the quality of health services.

Technological advances that are now very fast can support home care delivery by nursing. With advances in technology, home care nurses will find it easier to find journals or articles related to home care services. Technology can increase the knowledge and insight of nurses and improve the quality of services from home care nurses for clients. The development of communication technology allows nurses to do telemedicine. Telemedicine uses electronic information and communication technologies to provide and support health care when distance separates patients and healthcare professionals. Telemedicine technology is quite heterogeneous, including telecommunications, telemonitoring, teleconsultation, telecare, Tele-education, and so on (28). Utilizing internet facilities can also help, especially in situations where sufferers cannot come to the hospital directly. Internet-based service facilities can be an option to provide health services when patients are taking care at home. Internet-based

services provided when performing home care can be in the form of tele-education regarding the patient's health, consultation regarding health problems, or reminders to do therapy.

Although services can be provided online via the internet, nurses still have to directly ensure the patient's condition through regular home visits to monitor the patient's condition regularly. COPD that gets worse will impact all aspects of the patient's quality of life. Thus, a palliative, interdisciplinary approach needs to be adopted from primary and secondary care, social services, and voluntary agencies in the early stages of the disease (33). Teams of healthcare professionals from various disciplines work closely with patients and carry out the assessment, diagnosis, intervention, goal setting, and development of treatment plans (34). Study results (17) show that integrated care for COPD patients has positively impacted patients' quality of life.

LIMITATIONS

The limitations felt during the research are the limited time and difficulty finding journals according to the author's criteria and finding appropriate keywords. Many relevant journals were obtained from the title and abstract but when reviewed not under inclusion, such as not using the Randomized Control Trial and Quasi Experiment methods, and at the time of selection.

It is hoped that there will be more research and studies that discuss the effectiveness of home care-based COPD management and the comparison of the effectiveness of COPD care in hospitals and at home. The Indonesian government is expected to develop policies on palliative care that focus on cancer and other life-limiting diseases that require palliative care and promotive, preventive, curative, and rehabilitative activities. This policy needs to be developed immediately in developing countries, especially Indonesia, lacking palliative care.

CONCLUSION

Two treatments can be available for COPD patients: hospital-based management and home care. Based on the articles that have been obtained, complementary therapies can be done to improve the quality of life of COPD patients. Several therapies that can be done at home, namely Pursed Lip Breathing and breath relaxation, have improved patients' health and quality of life. There is a need for an interdisciplinary approach to COPD management where team members from different disciplines work collaboratively, with a common goal, to set goals, make decisions, and share resources and responsibilities. Teams of health professionals from various fields work closely with patients and carry out the assessment, diagnosis, intervention, goal setting, development of treatment plans, and evaluation of care. In this case, we have a solution to optimize management for COPD patients called HAPPY (home-based supportive, rehabilitative, and palliative care therapy). Management of COPD at home can be made easier with current technological advances, namely telecommunications, including telemonitoring, teleconsultation, telecare, and tele-education, where most of Indonesia's urban areas have access to the internet.

It is hoped that there will be more research and studies that discuss the effectiveness of home care-based COPD management and the comparison of the effectiveness of COPD care in hospitals and at home. It also expects the Indonesian government to develop policies regarding palliative care that focus not only on cancer but also on other life-limiting illnesses that require palliative care and promotive, preventive, curative, and rehabilitative activities. This policy needs to be developed immediately in developing countries, especially Indonesia, lacking palliative care.

ACKNOWLEDGEMENT

The authors would like to express gratitude to Universitas Padjadjaran for providing the database for this review study. Special thanks to the Faculty of Nursing, Universitas Padjadjaran, for the support and study grant facilities. Lastly, thanks to Sidik Maulana for giving valuable inputs to the authors during this review study.

REFERENCES

1. Suryadinata RV. Effect of free radicals on the inflammatory process in chronic obstructive pulmonary disease (COPD). Amerta Nutr. 2018;2(4):317–24.
2. World Health Organization (WHO). Chronic respiratory diseases [internetinternet]. Wold Health Organization. [cited 2021 December 3rd]. Available from: https://www.who.int/health-topics/chronic-respiratory-diseases#tab=tab_1
3. Kementerian Kesehatan RI. Laporan Hasil Riset Kesehatan Dasar (Riskesdas). Jakarta; 2013.
4. Ritianingsih N. Lama sakit berhubungan dengan kualitas hidup pasien penyakit paru obstruksi kronis (ppok). J Kesehat Bakti Tunas Husada J Ilmu-ilmu Keperawatan, Anal Kesehat dan Farm. 2017 Feb 26;17(1):133–8.
5. Cruz J, Marques A, Figueiredo D. Impacts of COPD on family carers and supportive interventions: a narrative review. Health Soc Care Community. 2017 January 1st;25(1):11–25.
6. Nur Rohmah U, Amin M, Makhfudli M. Evidence Based Faktor yang Berhubungan Dengan Kualitas Hidup Pasien PPOK Stabil: A Systematic Review. J Penelit Kesehat "SUARA FORIKES" (Journal Heal Res "Forikes Voice"). 2020 Apr 9;11(3):233–6.
7. Kim SH, Oh YM, Jo MW. Health-related quality of life in chronic obstructive pulmonary disease patients in Korea. Health Qual Life Outcomes. 2014 April 24th;12(1):1–7.
8. Nurmayanti N, Waluyo A, Jumaiyah W, Azzam R. Pengaruh Fisioterapi Dada, Batuk Efektif dan Nebulizer terhadap Peningkatan Saturasi Oksigen dalam Darah pada Pasien PPOK. J Keperawatan Silampari. 2019;3(1):362–71.
9. Rahmi U, Ramadhanti D. Gambaran Pengetahuan Perawat Tentang Manajemen Pelayanan Hospital Homecare Di Rsud Al-Ihsan Jawa Barat. J Pendidik Keperawatan Indones. 2017 Dec 30;3(1):78–82.
10. IAHPC. Palliative Care Definition [Internet]. International Association for Hospice & Palliative Care. 2019 [cited 2021 Dec 4]. Available from: https://hospicecare.com/what-we-do/projects/consensus-based-definition-of-palliative-care/definition/
11. Damps-Konstańska I, Werachowska L, Krakowiak P, Kaczmarek M, Cynowska B, Górecka D, et al. Acceptance of home support and integrated care among advanced COPD patients who live outside large medical centers. Appl Nurs Res. 2016 Aug 1;31:60–4.
12. Scheerens C, Pype P, Van Cauwenberg J, Vanbutsele G, Eecloo K, Derom E, et al. Early Integrated Palliative Home Care and Standard Care for End-Stage COPD (EPIC): A Phase II Pilot RCT Testing Feasibility, Acceptability, and Effectiveness. J Pain Symptom Manage. 2020;59(2):206–224.e7.
13. Khairunnisa, Suhaimi F, Sukarni. Pengaruh pursed lip breathing exercise terhadap intensitas sesak napas pada penderita penyakit paru obstruksi kronik (ppok) di rsud dr. Soedarso pontianak. jurnal.untan.ac.id. 2019;44(12):2–8.
14. MJW E, Rosa EM. Efektifitas Nafas dalam untuk Meningkatkan Arus Puncak Ekspirasi (Ape) pada Pasien Penyakit Paru Obstruktif Kronik (Ppok. Indones J Nurs Pract. 2016;3(1):35–41.
15. Fadhila R, Afriani T. Penerapan telenursing dalam pelayanan kesehatan : Literature Review. J Keperawatan Abdurrab. 2019;3(2):77–84.
16. Guistini D. Early years transitions Supporting Children and Families at Risk of Experiencing Vulnerability: Rapid Literature Review ©State of Victoria (Department of Education and Training)

2017. 2016.
17. Hoogendoorn M, Van Wetering CR, Schols AM, Rutten-Van Mölken MPMH. Is INTERdisciplinary COMmunity-based COPD management (INTERCOM) cost-effective? Eur Respir J. 2010;
18. Rosyadi I, Djafri D, Rahman D, Keperawatan B, Bedah M, Keperawatan F. Pengaruh Pemberian Pursed Lip-Breathing, Diaphragmatic Breathing, dan Upper Limb Stretching Terhadap Skala Dispnea pada Pasien PPOK. NERS J Keperawatan. 2019 Oct;15(2):103–9.
19. Wijaya IK, Sjattar EL, Bahar B. Pengaruh Self Care Education Dan Pursed Lip Breathing Exercise Terhadap Toleransi Fisik Pada Pasien Penyakit Paru Obstruksi Kronis (Ppok). Patria Artha J Nurs Sci. 2017;1(2).
20. Permata Sari Tarigan A, Juliandi J. pernafasan pursed lip breathing meningkatkan saturasi oksigen penderita penyakit paru obstruktif kronis (ppok) derajat ii. j online keperawatan Indones. 2018;1(2):39–46.
21. Khasanah S, Maryoto M, Harapan S, Purwokerto B. Efektifitas posisi condong ke depan (ckd) dan pursed lips breathing (plb) terhadap peningkatan saturasi oksigen pasien penyakit paru obstruktif kronik (ppok). Pros Semin Nas Int. 2014;0.
22. Dwi Utari D V, Mastiningsih P, Oka Astariningsih AA, Prodi III Kebidanan MD, Bina Usada Bali S, III Kebidanan DD. Pengaruh Self-Management Education Terhadap Pemberdayaan Pasien Penyakit Paru Obstruksi Kronik (PPOK) di RSUD Wangaya Denpasar. J Cent Res Publ Midwifery Nurs. 2017 Jun;1(1).
23. Hansen H, Bieler T, Beyer N, Godtfredsen N, Kallemose T, Frølich A. COPD online-rehabilitation versus conventional COPD rehabilitation - rationale and design for a multicenter randomized controlled trial study protocol (CORe trial). BMC Pulm Med. 2017 Nov;17(1):1–14.
24. Geidl W, Semrau J, Streber R, Lehbert N, Wingart S, Tallner A, et al. Effects of a brief, pedometer-based behavioral intervention for individuals with COPD during inpatient pulmonary rehabilitation on 6-week and 6-month objectively measured physical activity: Study protocol for a randomized controlled trial. Trials. 2017 Aug;18(1):1–10.
25. Farmer A, Williams V, Velardo C, Shah SA, Yu LM, Rutter H, et al. Self-Management Support Using a Digital Health System Compared With Usual Care for Chronic Obstructive Pulmonary Disease: Randomized Controlled Trial. J Med Internet Res 2017;19(5)e144 https//www.jmir.org/2017/5/e144. 2017 May;19(5):e7116.
26. Boer L, Bischoff E, van der Heijden M, Lucas P, Akkermans R, Vercoulen J, et al. A Smart Mobile Health Tool Versus a Paper Action Plan to Support Self-Management of Chronic Obstructive Pulmonary Disease Exacerbations: Randomized Controlled Trial. JMIR Mhealth Uhealth 2019;7(10)e14408 https//mhealth.jmir.org/2019/10/e14408 . 2019 Oct;7(10):e14408.
27. Badan Pusat Statistik. Persentase Merokok Penduduk [Internet]. Available from: https://www.bps.go.id/dynamictable/2018/07/02 15:24:37.29374/1514/persentase-merokok-pada-penduduk-umur-15-tahun-menurut-provinsi-2015-2016.html
28. Donner CF, Raskin J, ZuWallack R, Nici L, Ambrosino N, Balbi B, et al. Incorporating telemedicine into the integrated care of the COPD patient a summary of an interdisciplinary workshop held in Stresa, Italy, 7–8 September 2017. Vol. 143, Respiratory Medicine. 2018. p. 91–102.
29. Wijsenbeek MS, Moor CC. Palliative Care in Interstitial Lung Disease. In: Elsevier. 2021. p. 189–207.
30. Susanto J. UPAYA DINAS KESEHATAN DALAM MENCEGAH PENYEBARAN PENYAKIT HIV AIDS DI KABUPATEN BUNGO. 2019;2(1):37.
31. Depkes. RI. Pengembangan Model Praktik Pelayanan Mandiri Keperawatan. Pusgunakes, editor. Jakarta; 2002.
32. Hardianti AF, Widyawati IY, Mariyanti H. Family Behavior in Maintenance Status Hb Chronic Renal Failure Patients through Family-Centered Care Approach of Diet Fe Management. J Ners. 2013;8(1):118–25.
33. Robinson T. Living with severe hypoxic COPD: the patients' experience. Nurs Times. 2005;101(7):38–42.
34. Liang J, Abramson MJ, Russell G,

Holland AE, Zwar NA, Bonevski B, et al. Interdisciplinary COPD intervention in primary care: a cluster randomized controlled trial. Eur Respir J. 2019 Apr;53(4):1801530.

1. Study Characteristics

No	Nama Penulis, Tahun	Study Design	Location	Sample	Aim	Results
1.	Helen et al. (2014)	*RCT*	Australia	Eighty-four outpatient adult COPD patients. 15 of them resigned.	To find out whether self-management of chronic disease can benefit people with COPD.	Self-management programs can increase patient endurance in 6MWD (6-minute-walking-distance).
2.	Rosyadi et al. (2019)	*RCT*	Indonesia	36 COPD patients.	To see the difference between the intervention group that was given pursed-lip breathing, diaphragmatic breathing, and upper limb stretching exercises and the control group that was not given therapy.	There were differences in dyspnea in the intervention group and no differences in the control group.
3.	Hansen et al. (2017)	*RCT*	Denmark	134 severe COPD patients.	To compare the potential benefits of a 10-week online COPD rehabilitation program with conventional COPD rehabilitation.	There was a change in 6MWD after 10/12 weeks of intervention.
4.	Wolfgang et al. (2017)	*RCT*	German	502 COPD patients aged 18 years or older.	To determine the determinants of physical activity in COPD patients and effective rehabilitation strategies to increase physical activity in COPD patients.	Health outcomes related to the physical activity of patients with COPD are influenced by psychological related other physical activities and prognostic assessments of their disease.
5.	Farmer et al. (2017)	*RCT*	United Kingdom	166 COPD patients	To determine the effectiveness of digital health and self-management in improving the quality of life and clinical outcomes of COPD patients.	The EDGE clinical trial had no specific effect on the health of COPD patients. However, overall beneficial in general health status; to reduce depression scores, and reduce hospital visits.
6.	Marques et al. (2015)	*RCT*	Portugal	42 pairs of families and COPD patients	To determine the impact of pulmonary rehabilitation programs based on psychosocial support and family education on COPD patients.	Patients with family support showed significant changes in psychological stress and sexual relations and improved health.
7.	Lonneke et al. (2019)	*RCT*	Netherlands	87 COPD patients aged 40 years	To examine the effect of an innovative mobile medical device (mHealth) that supports self-medication of COPD patients independently.	MHealth (mobile health tool) is more valuable than the paper action plan, although no difference was found in terms of frequency of use.
8.	Scheerens et al. (2020)	*RCT*	Belgium	The 70 eligible COPD patients were 39 (56%) participating and 64% completing the trial.	To test the feasibility, acceptability, and effectiveness of the initial integrated primary health care program for end-stage COPD patients.	The effectiveness analysis showed no effect of the overall intervention on the outcome. However, the perceived service quality trend was higher in the intervention group.

9.	Scholastica (2016)	*quasi-experiment*	Indonesian	70 respondents were divided into three groups, two intervention groups, and one control group	To see the impact of physical activity combined with pursed-lip breathing (PLB) on the quality of life of COPD patients.	A significant difference was found after six weeks of intervention in the two groups' quality of life before and after the intervention.
10.	Wijaya IK, et al. (2017)	*quasi-experiment*	Indonesian	20 COPD patients.	To determine the effect of self-care education and Pursed Lip Breathing exercise on physical tolerance in COPD patients.	There was a significant difference in the results of the 6MWD measurement before and after in the intervention group.
11.	Putu Wira (2017)	*quasi-experiment*	Indonesian	36 COPD patients were divided into the intervention group (18 patients) and the control group (18 patients).	This study aimed to determine the effect of self-management education on empowering COPD patients.	*Self-management education affects knowledge, attitudes, actions, decision-making abilities, and patient self-efficacy. However, it has not been effective in reducing COPD symptoms.*

2. Study Feasibility Assessment Checklist Form

Table 2. JBI Critical Appraisal For Quasi Experiment

No.	Critical Appraisal for Randomized Controlled Trial (Study)	Cameron et al., (2014)	Rosyadi et al, (2019)	Hansen et al, (2017)	Wolfgang et al, (2017)	Farmer et al, (2017)	Marques et al, (2015)	Lonneke et al, (2019)	Scheerens et al, (2020)
1.	Was true randomization used for the assignment of participants to treatment groups?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2.	Was allocation to treatment groups concealed?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
3.	Were treatment groups similar at the baseline?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
4.	Were participants blind to treatment assignment?	Yes	Yes	Yes	Yes	Yes	Yes	No	No
5.	Were those delivering treatment blind to treatment assignment?	Yes	No	Yes	No	Yes	No	No	No
6.	Were outcomes assessors blind to treatment assignment?	Yes	No	Yes	Yes	Yes	No	Yes	No
7.	Were treatment groups treated identically other than the intervention of interest?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
8.	Was follow-up complete and if not, were differences between groups in their follow-up adequately described and analyzed?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
9.	Were participants analyzed in the groups to which they were randomized?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
10.	Were outcomes measured in the same way for treatment groups?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
11.	Were outcomes measured reliably?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
12.	Was appropriate statistical analysis used?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
13.	Was the trial design appropriate, and any deviations from the standard RCT design (individual randomization, parallel groups) accounted for in the conduct and analysis of the trial?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Table 3. JBI Critical Appraisal For Quasi Experiment

No	Critical Appraisal For Quasi-Experimental Studies	Scholastica (2016)	Wijaya IK, et al. (2017)	Putu Wira (2017)
1.	Is it clear in the study what the 'cause' and the 'effect' (i.e., there is no confusion about which variable comes first)?	Yes	Yes	No
2.	Were the participants included in any comparisons similar?	Yes	Yes	Yes
3.	Were the participants included in any comparisons receiving similar treatment/care, other than the exposure or intervention of interest?	Yes	Yes	Yes
4.	Was there a control group?	Yes	Yes	Yes
5.	Were there multiple measurements of the outcome, both pre and post the intervention/exposure?	Yes	No	Yes
6.	Was follow-up complete and if not, were differences between groups in their follow-up adequately described and analyzed?	No	Yes	Yes
7.	Were the outcomes of participants included in any comparisons measured in the same way?	Yes	Yes	Yes
8.	Were outcomes measured reliably?	Yes	Yes	Yes
9.	Was appropriate statistical analysis used?	Yes	Yes	Yes

3. Risk of Bias in Results

   Judging by the feasibility of the JBI Critical Appraisal, a systematic review of the 11 included studies had a low risk of bias. Some studies did not have a control group in the given intervention, so a particular problem cannot be interpreted from uncontrolled data due to susceptibility to confounding factors.