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Effective Methods of Self-management Education on Patients with COPD

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<p>Chronic Obstructive Pulmonary Disease is a chronic life-threatening lung disease that may progressively lead to death. The amount of people with moderate to severe COPD is 65 million with an estimation of 8,3 million deaths by 2030.</p> <p>The purpose of this thesis was to describe the effectiveness of self-management education on patients with COPD. The goal of this literature review is to use the knowledge received to develop nursing intervention on self-management education in patients with COPD. The study question is: what are the characteristics of effective methods of self-management on patients with COPD?</p> <p>Eleven articles were obtained from CINAHL and PubMed, which are very common and reliable databases. The selected articles were then categorised and analysed in a standardized way using the principles of inductive content analysis. The findings are displayed in a form of literature review.</p> <p>The findings were classified into four interventions, which are: pulmonary rehabilitation, physical activity, smoking cessation and medicine management. The method used during those interventions were audio-visual counselling, individual/group education, health coaching, telehealth and motivational interviewing. According to this literature review, most educational interventions were conducted by nurses or health coach on the individual basis through videos, face to face and written materials.</p> <p>In this review, the four interventions are effective on the base of face to face interaction taking into consideration that it could be beneficial as well using digital/ telehealth. The key message is to consider patients as an individual in planning their education. The findings from this review could be beneficial for health care professional to enhance or promote self-management in patients with COPD</p>	

Keywords	self-management, patient education, COPD patients, nursing
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Tekijä Otsikko	Fatoumata Kone Keuhkohtaumatautia sairastavan potilaan omahoitoa tukevat vaikuttavat ohjausmenetelmät
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COPD on krooninen ja hengenvaarallinen keuhkosairaus, joka edetessään johtaa kuolemaan. Maailman väestöstä n. 65 miljoonaa sairastaa tautia joko lievänä tai vakavana. Taudin arvioidaan olevan syynä 8,3 miljoonaa kuolemaan vuonna 2030.

Tämän opinnäytetyön tavoitteena on kirjallisuuskatsauksen kautta kerätä olemassa olevaa tietoa COPD-potilaiden itsehallintaa tukevasta hoitotyöstä. Tutkimuskysymys on: millaisia ominaisuuksia on COPD-potilaiden tehokkailla itsehoitomenetelmillä?

Yksitoista artikkelia valittiin CINAHL- ja PubMed-tietokannoista, jotka ovat tunnettuja ja luotettavia lähteitä. Valitut artikkelit analysointiin ja lajiteltiin systemaattisesti, induktiivisen sisältöanalyysin periaatteiden mukaisesti. Tulokset on esitetty kirjallisuuskatsauksen muodossa.

Tulokset kirjallisuuskatsauksesta lajiteltiin neljän interventiotyyppin mukaan: keuhkojen kuntoutus, liikunnallinen kuntoutus, tupakoinnin lopettaminen ja lääkehoito. Interventiot lajiteltiin edelleen alaryhmiin: audiovisuaalinen neuvonta, yksilön/ryhmän koulutus, terveys- ja hyvinvointivalmennus, telehealth ja motivoiva haastattelu. Tämän opinnäytetyön pohjalta lupaavimpia olivat koulutustoimet, jotka toteutettiin sairaanhoitajien tai terveysvalmentajan toimesta yksilöllisesti videoiden, kasvatusten ja kirjallisten materiaalien kautta.

Kirjallisuuskatsauksen perusteella nämä neljä interventiotyyppiä ovat tehokkaita vuorovaikutuksessa ja niitä voidaan hyödyntää myös digitaalisen / telehealth-palvelun avulla. Keskeinen viesti tästä työstä on käsitellä potilasta yksilönä suunniteltaessa interventiota. Kirjallisuuskatsauksen tulokset voivat olla hyödyllisiä edistämään itsehoitoa keuhkohtaumatautia sairastavilla potilailla.

Avainsanat	itsensä johtaminen, potilasohjaus, COPD-potilaat, hoitotyö
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1 Introduction

Chronic Obstructive Pulmonary Disease (COPD) is a constant life-threatening lung disease that may progressively lead to death and causes persistent breathlessness on exertion. The World Health Organisation (WHO) estimates the amount of people with moderate to severe COPD to be 65 million. There is an estimation of 3,17 million deaths from COPD in 2015, which is about 5% of all deaths universally. In addition, more than 90% of COPD death occur in low and middle-income countries (WHO, 2017.)

According to National Health and Welfare Institute (THL) statistics, there were 101,000 people hospitalised between 2000 and 2009 due to COPD. In Finland 2012, it is estimated that 1 044 people died, of whom 721 were men (Käypä hoito, 2014.) In 2002, the fifth leading cause of morbidity was COPD. Total deaths from COPD had increased by more than 30% in the next 10 years, therefore there is estimation of COPD being the third leading cause of death in 2030 (WHO, 2018.)

Research showed how physiological, psychological and social aspects of life are affected in COPD patients, therefore life-style changes are important in the management of COPD and promotes health enhancing behaviour. For instance, stop smoking (which is the greatest factor for COPD), physical exercises, breathing and coughing technique and dietary counselling. Patients can be supported to live a healthy life by helping them control and organised their daily activity (Efraimsson, Hillervik & Ehrenberg, 2018.)

Self-management education (SME) is a program that help people with chronic health conditions to learn developing self-management skills, improving self-health behaviour in order to increase their responsibility for their daily care. SME is clinically recommended for people with COPD to help monitor their symptoms and promote healthy QOL. SME vary widely in the information, how to deliver it and making it clear meaning which techniques are effective for better outcomes (ERS, 2018.)

2 Background

2.1 Chronic Obstructive Pulmonary Disease (COPD)

COPD is a chronic lung disease that is characterized by constant lung airflow limitation and pulmonary emphysema. COPD is incurable but many cases of it are preventable by avoiding the risk factors if possible. The primary cause of COPD is tobacco smoke (either active smoker or passive exposure). WHO estimates 5.4 million deaths caused by smoking in 2015, therefore expects an increase of 8,3 million deaths by 2030 (WHO, 2018).

In Finland, a survey showed that 34% of the examined men smoked and 25% were women. The incidence of COPD in non-smokers was 3%, less than 20-year-old smoker was 4% and 20-29-year-old smokers was 12% (Käypä hoito, 2014.)

Early smoking cessation is an intervention program to improve the diagnosis and decrease complications or even prevent the disease. Other than smoking cessation, indoor and outdoor air pollution, occupational dust and chemicals (vapours, fumes and irritants) are risk factors of COPD as well as frequent lower respiratory infection (asthmatic smoker) (WHO, 2017.) The disease is manifest with symptoms such as dyspnoea, anxiety, depression, chronic cough, wheezing and constant respiratory infections.

2.2 Patient education

Patient education is a procedure in which healthcare professional and others provide information to patients about their health status for behavioral changes and improve their health. The goal of patient education is to improve patient's knowledge of the disease, their coping skills to manage the disease and promote behavioural changes for healthy life. Patient education should be structured and planned in a way that it helps patients to notice abnormal changes and deal with them using problem solving skills or health resources if needed. (King, Tessier, Charette & Gaudet, 2018.)

Patient education is essential for an effective and competent self-management for patients with COPD. Patient education interventions provides skills and tools for self-efficacy, reduce the number of hospital admission and promote rehabilitation. In patient education, the focus is the patient-centred care in which patients have more power over their care, make decision-making and plans their care with healthcare professionals (Falvo, 2011).

2.3 Self-management Education

The concept of self-management education is the chronic care plan model of disease management, which includes clinical information about the disease, delivery systems for the care (what need to be done and how) and decision support (guidelines). The idea is to promote self-efficacy to enhance health behavioral changes for a better quality of life (Nici, Bontly, ZuWallack & Gross, 2014.) The aim of self-management education is to educate and provide information, skills and knowledge needed for patients to manage their symptoms and condition efficiently (Barnett, 2009).

Self-management education has been proven to be very effective in COPD management back in the days. Self-management was described as patients following health care professionals' advice and make an agreement on their prescribed therapies and medical treatment. Nowadays, research showed that self-management is a multidimensional construct consisted by several domain such as active commitment in life, positive attitude social integration and support from the Health Education Impact Questionnaire (Bringsvor, Skaug, Langeland, Oftedal, Assmus, Gundersen & Bentsen, 2018.)

Self-management intervention includes education and action plans, while the education is the center stage. The focus of this intervention is to maintain behavioral changes to achieved goals and enable the patients to be actively part of their care as well as living and managing with their disease. According to Bourbeau et al. (2003), self-management intervention resulted in 39,8% hospital admissions reduction comparing to usual care. Rice and colleagues (2010) reported on a reduction of COPD hospitalizations and emergency visits by 41% and improved health status as well as decreased mortality.

3 Purpose, aim and study questions

The purpose of this literature review was to describe the methods of self-management education on patients with COPD.

The aim of this literature review is to use the knowledge received to develop nursing intervention on self-management education in patients with COPD.

This literature review aims to answer the following question: What are the characteristics of effective methods of self-management education on patients with COPD?

4 Methods

4.1 Descriptive literature review

A descriptive literature review was used as an appropriate research method for this bachelor thesis. It is a research method done through description, summaries and analysis of previously researches or studies done about a topic of interest (Parahoo, 2014 :118-119).

Literature review is a very powerful information sources for practitioners gathering evidence to guide their decision-making and work practices. Literature reviews are important for 5 reasons which are: identifying studies done on a topic; determining whether the research place reveals any interpretable patterns; collecting findings related to a specific study question to support evidence-based practice; creating new frameworks and theories and lastly identifying questions needed for more investigation (Paré, Trudel, Jaana, & Kitsiou, 2015.)

4.2 Search strategy

According to Templier and Paré (2015), there are six stages in conducting a review article which are: 1) formulate the research question or aim; 2) search for existing literature; 3) scan for inclusion; 4) access the quality of the original studies; 5) obtain data and 6) analysing data.

The articles for this research were collected from databases such as Pubmed and CINALH. This literature review was limited to English language articles only, published during the past ten years from 2008-2018. The search terms were the combination of keywords such as COPD patients AND self-management OR patient education. PICO framework was used to identify key terms and synonyms (Table 1).

Table 1. PICO framework

Participant (P)	Patients with COPD, emphysema, pulmonary emphysema, chronic bronchitis
Intervention (I)	Self-management, patient education, patient-teaching, counselling, self-sufficiency education, support, pulmonary rehabilitation, telehealth, social learning
Comparison (C)	Other patient education, standard patient education or no comparison (placebo, pre-test-post-test)
Outcome (O)	Any outcome (especially physical independence and quality of life)

4.3 Inclusion and exclusion criteria

According to Parahoo (2014), inclusion and exclusion are done to show the boundaries of a review and identifying the factors to narrow down the research. This literature review included only adult patients over 18 years old. Studies older than ten years were excluded. Allowing to obtain the most current, scientific and evidence-based articles and journals (more reliable) to decrease bias in the review. Table 2 illustrates the inclusion and exclusion criteria for this literature review.

Table 2. Inclusion and exclusion criteria

Inclusion criteria	Exclusion criteria
<ul style="list-style-type: none"> - COPD patients - Adult patients >18 - English language - years 2008-2018 - Academic and scientific journal - Researched articles - Either randomized controlled trial (RCT), non-RCT with controls, a randomized cross trial or pilot study 	<ul style="list-style-type: none"> - Pediatric patients - Case reports - Patients with other disease than COPD - Patients with a DNR (do not resuscitate) - Studies older than 10 years - Cognitive impairment patients - Articles not related to the study question

4.4 Literature selection process

This phase consists of recording and saving the results of all searches done in an electronic pattern. Electronic search provides a broad and recent selection of articles compared to a book by using precise key terms (Parahoo, 2014). The literature search process as shown in table 3 includes the database, search terms, date searched, the title, the abstract and articles used for the final analysis. There were 571 hits in total, where 75 titles were similar to search terms but only 60 abstracts were read. Using including and excluding criteria, out of those 60 articles 11 articles that answered the study question were chosen.

Table 3. Literature search process from databases

Database	PubMed	CINAHL	Total
Search terms	Effective intervention AND self-management AND COPD patients (1) Teleheal AND patient education AND COPD patients (2)	Self-management AND patient educa- tion AND COPD patients	
Date searched	5.12.2018 (1) 23.12.2018 (2)	19.12.2018	
Hits	143 (1) and 394 (2)	34	571
Title	50 and 10	15	75
Abstract	44 and 6	10	60
Relevant to final analysis	9	2	11

4.5 Data extraction

Data extraction is a method done to obtain the relevant information from the previews work done before analysis (Aveyard, Payne, & Preston, 2016). With a data extraction form shown in appendix as analysis of articles, this literature review writing was managed and progressed. Eleven articles were selected for the final analysis after removal of duplications and exclusion criteria.

4.6 Data analysis

The data of this bachelor thesis were analysed using the inductive content analysis. The content analysis aimed to summarise the main topic and express the similarities and differences in the data, creating a vivid table of themes (Fawcett, Garity, 2009:227). The articles chosen from the electronic databases were carefully read and re-read to find common themes.

Inductive content analysis is divided into 3 stages which are: the preparatory phase which consist of familiarising with obtained data by re-reading them and have clear understanding of the findings; the organisational phase: where similar themes that answered the study question are grouped into categories and reporting phase where the finding is summarised and reported. The purpose of inductive content analysis is to group together similar themes that belong and extract those not belonging to the same categories (Elo & Kyngäs 2007). In this thesis, education methods derived from the principles of inductive content analysis are shown in Figure 1. And figure 2 below represent the education programs and its content used in the studied articles.

Figure 1. Education methods

Methods	Subcategories	Main Category
- Audio-visual counselling	videos, slide-tape presentation	Methods of self-management education
- Individual/group education	group interviews face to face interviews	
- Health coaching	gym based supervised exercises workbook	

- Telehealth	Telephone calls, tablet computer, pedometer, personal digital assistant	
- Motivational interviewing		

Figure 2. Education programs

Education Programs	Education programs' content
Pulmonary Rehabilitation	Breathing technique
Physical Activities	Exercises, strength training
Smoking Cessation	Emotional support
Medication Management	Inhaler techniques

5 Findings

5.1 General Findings

In this literature review, eleven articles were analyzed after taking into consideration the inclusion and exclusion criteria mentioned above. The studies were from Iran, USA, Canada, England and Australia. From the data analysis, all the reviewed articles used questionnaires as their method of data collection either pre or post intervention. Ten out of eleven studies had controlled group to support their findings (Khoshkest et al. 2015; Ashmore et al. 2013; Nguyen et al. 2008; Sidhu et al. 2015; Coultas et al. 2016; Poureslami et al. 2016; Cameron-Tucker et al. 2016; Farmer et al. 2017; Huang et al. 2017 and Stelfson et al. 2009) and usual care appeared to be the most common control group from the articles to support their findings. Other comparisons are done between different

methods to see which one was more effective. For example, face to face vs internet based or DVD technology vs printed-based material. (Nguyen et al. 2008 and Stellefson et al. 2009).

After classifying and analyzing the findings of the eleven articles, there were five different factors in the methods of self-management education on COPD patients. Those aspects were: audio-visual counselling, individual/ group education, health coaching, telehealth and motivational interviewing, as presented in Figure 1 above.

According to the findings of the eleven articles, four interventions classified as education programs were discussed from the analysis. Those interventions were: pulmonary rehabilitation, smoking cessation, physical activities and medication management as shown in Figure 2 above. Out of eleven articles, two studies focused on only pulmonary rehabilitation (Khoshkest et al. 2015 and Rehman et al. 2017); three focused on physical activities (Ashmore et al. 2013; Coultas et al. 2016 and Nguyen et al. 2008); two articles discussed about all four aspects (Huang et al. 2017 and Stellefson et al. 2009); two articles for pulmonary rehabilitation and medication management (Poureslami et al. 2016 and Farmer et al. 2017); One article discuss about pulmonary rehabilitation and physical activities (Cameron-Tucker et al. 2016) and the last article for smoking secession and medication management (Sidhu et al. 2015).

5.2 Education Programs

The education programs are important to understand because combine with the method of education, it will be clear to see the effectiveness of self-management education. The education programs consisted of pulmonary rehabilitation, physical activities, smoking cessation and medication management. Those interventions were then categorized into contents of education programs, which were: breathing exercises, strength training exercises, emotional support and inhaler techniques.

Pulmonary rehabilitation

Pulmonary rehabilitation is a program intended for people with chronic breathing problems to improve their well-being. It is a commitment from a team health care provider

and the patient to manage to decrease symptoms and increase patient's ability to exercise and improve their quality of life. Pulmonary rehabilitation includes exercise training/ breathing methods, nutritional and psychological counseling, education about the disease and its management (NIH, 2018). Pulmonary rehabilitation seemed to be the common method for self-management as it is presented in seven of the chosen articles.

Physical activities

Physical activities have been proven by early researches to prevent or treat noncommunicable disease such as heart disease as well as certain condition such as obesity and hypertension. It can improve quality of life and overall wellbeing (WHO, 2019.) The mechanism between exercise and COPD is important to understand. Exercise helps the blood circulation and the heart's provision of oxygen to our body. It strengthens our respiratory muscles and makes breathing easier. Therefore, shortness of breath as symptom for COPD improves.

From the analysis, physical activities seemed to be the second most common intervention after pulmonary rehabilitation with six articles as describe above. According to Ashmore and colleagues (2013), the number of eligible patients having access to gold-standard pulmonary rehabilitation are less than one percent. Therefore, physical activity intervention is convenient for people unable to attend or complete center-based pulmonary rehabilitation. The physical activity intervention is aimed to increase daily physical activity in patients with COPD.

Smoking cessation

Smoking cessation is the process of quitting or discontinue tobacco smoking. From the chosen articles, three articles discuss about smoking cessation (Huang et al. 2017; Sidhu et al. 2015 and Stellefson et al. 2009). According to Sidhu et al. (2015) study, smoking cessation is encouraged with information about the consequence of smoking and benefit of smoking cessation through booklets by health care professionals. This intervention is followed up by phone consultations and emotional support either from friends, family or people with same condition sharing experiences. As a result, more people were ready to quit smoking compare to the usual care.

Medication management

Medication management involve patient-centred care to empower safe, efficient and suitable drug therapy. In the Sidhu et al. (2015) study, health care professionals get information about participants medication devotion, their confidence with their inhaler method and how well they can use the inhaler. In case there has been problems or forgot to take their medications, behavioral self-monitoring was encouraged with a written log. Those patients were advised to get either a medication box or an alarm for a reminder, if that didn't help seek for support from a partner or family member. Patient with prescription to start antibiotics or steroids independently were accessed about their confidence in starting this medication. However, patients not confident for the action plan should discuss with the health care professionals.

In the studied articles, use of inhaler technique was demonstrated either by face to face intervention or video educational materials as well as written instruction. Video and face to face intervention seemed to be more effective than written instructional materials (Poureslami et al. 2016).

5.3 Education methods

Education methods used in this thesis are audiovisual counseling, individual/ group interview, health coaching, telehealth and motivational interview. Each section will be discussed shortly and their finding presented.

Audiovisual counseling

Audiovisual counseling is a way of patient education using both hearing and sight such as slide-tape presentations and videos as showed in Figure 1. From the articles, various audiovisual counseling was used such as combination of written material and verbal information, videos, pamphlet or leaflets. Audiovisual counseling was identified in all the studies and some articles used either audio or visual.

Khoshkest and colleagues (2015) reported on a randomized case control trial on COPD pulmonary rehabilitation program. The program consisted of education about COPD, diet therapy, breathing and muscles exercises through telephone follow up, booklets to read and face to face consultation. In their studies, the score of self-efficacy improved for the intervention group compared to control group.

Similarly, Poureslami et al. (2016) examined 91 patients into intervention groups with audio-visual educational interventions (videos) and one control group (pamphlet) to improve patients understanding of pulmonary rehabilitation procedure. There was a significant improvement in understanding of PR procedures compared to the control group. From the analysis, audio-visual education, especially face to face intervention showed more understanding, increase self-efficacy and better quality of life in all the study except three studies which focused only audio education (Cameron-Tucker et al. 2016; Ashmore et al. 2013 and Coultas et al.2016).

According to Stellefson et al. (2009) study, DVD was effective compared to printed based materials in COPD management education of rural patients. A pilot study was used to explore the effect of three educational intervention, which were DVD vs Pamphlet vs. DVD + Pamphlet. As results, patients in DVD intervention reported great improvement of lung-specific physical functioning as compared to patients receiving a Pamphlet. Furthermore, DVD patients showed improvements on two dimensions of lung-specific health related to quality of life. However, there were no such improvements occurred within the Pamphlet and control groups.

Individual / group interview

Individual patient education involves any method the patient receives information from health care professional individually without the presence of others. In the analysis, face to face and telephone delivered interview were identified. In all the articles, individual interview was presented through phone calls to encourage the patient to be more active for their own care.

Group patient education includes a group of people instead of individual education, where a health care professional leads the group, give information and promote peer interaction to encourage mutual support. Face to face counselling was used in three of the studies (Huang et al. 2017; Khoshkest et al. 2015 and Nguyen et al. 2008) for demonstration and peer support.

Health coaching

In this final work, all the articles were related to health coaching in different ways how the message was delivered. In 2007, Butterworth and colleagues defined health coaching as *“a service in which providers facilitate participants in changing lifestyle-related*

behaviors for improved health and quality of life or establishing and attaining health promoting goals”.

In the Huang et al. (2017) controlled study, the efficacy of health coaches has been evaluated to promote patient self-management and improve quality of life for COPD patients. It was an intervention of nine-month health coaching to embellish disease understanding, improve the use of inhalers; make plans to increase physical activity, smoking cessation and overall improve disease management. Health coaches got specific training prior to the study. As results, physical activity improves breathing problem and reduce anxiety.

Ashmore et al. (2013) designed a controlled randomized trial called COPD SMART to determine the effect of lifestyle physical activity intervention on improving physical functioning and dyspnea. In their study, the education was given by health coach using workbook and weekly phone calls. There were two phases identified which are: activation phase which helps patients to change their attitudes about physical activity and maintenance phase which review and reinforce the main principles of the activation phase by focusing on maintaining regular lifestyle physical activity.

Telehealth

Telehealth means the use of telecommunications and essential technology to deliver health care outside of health-care environment such as home care. It helps patients to receive guidance from home and make work easier for health care provider in remote field settings (WHO, 2019).

Nguyen and colleagues (2008) assessed internet-based vs face to face dyspnea self-management on 50 participants in which 39 participants data were available. The content of the two programs was same but different on how it is given which were either internet, personal digital assistant (PDA) or face to face. Participants were evaluated over 6 months, as results there were clinically significant changes in dyspnea in both programs. Secondary outcomes were exercise behavior and performance. Both groups progress in their stage of readiness and 84% reported that they were in either action or maintenance phase. Withal, exercise accomplishment measured by the 6-minute walk test decreased in face to face and increased in internet-based.

In the Cameron-Tucker et al. (2016) study, COPD patients were randomised to either tele-rehab (home-based walking) or usual care over 8 to 12 weeks. Both participants received weekly education and self-management skills, but supervised exercise given separately. The primary outcome, which is the change in physical capacity was measured by 6-minute walk distance and the secondary outcomes was the changes in self-reported home-based walking. As results, there were no significant difference in 6-minute walk distance between the two participants nor meaningful change in any secondary outcomes. However, participants who were in the supervised exercise did demonstrate an increase of speed, but this was not clinically meaningful and not attending supervised exercise showed no change at all. Similarly, in the Coultas et al. (2016) study, there was a total of 325 patients including 149 patients receiving the intervention over 20 weeks. As result, there was no clinically significant change in the dyspnea domain in either group (usual care vs physical activity intervention). However, there were statistically significant changes in both groups for 6-minute-walk distance. Though, 6-minute-walk distance remained stable among patients in the intervention.

Farmer et al. (2017) examined the effect of digital health, Internet-linked monitoring and self-management support device compared to usual care. A total of 166 patients were 110 were in intervention group and 56 for usual care for a period of 12 months. From the findings, there was improvement in quality of life between the two groups and the decrease number of hospital admission.

Motivational interviewing

Motivational interviewing is a counselling method developed by clinical psychologists to help patients resolve ambivalence and find the internal motivation needed to change their behavior. Motivational interviewing is commonly used by health care professionals to promote health and prevent diseases. This counselling is done as a conversation between health professionals and clients, together they set the goal for the change (Miller and Rollnick, 1991.)

In all the studied articles, a telephone or face to face or video motivational interviewing was presented. Rehman H et al (2017) explore the effect of motivational interviewing on fifty subjects with moderate to severe COPD. Out of fifty, 86% completed the study in which dyspnea, the domains of emotional function and quality of life greatly improved

after the 3 months of health coaching. 71% of the subjects had a clinically significant improvement in either the severity of dyspnea or domain of quality of life.

From Sidhu et al. (2015) study, participants willing to stop smoking were encouraged to seek social support from family and friends as well as local smoking cessation services information were given to those not ready to change early or in case of relapse. Smoking cessation is a complex and durable procedure, therefore the changes take time. So, emotional support was offered through phone calls between health care professional and patients to maintain and promote their lifestyle changes.

6 Discussion

6.1 Discussion of the findings

Overall, all the intervention presented in this thesis enhance COPD patients with knowledge and promote self-management. Among the four different interventions, pulmonary rehabilitation appeared to be the most common programs of self-management education for COPD patients but that does not prove it's the most effective way of self-management. The method how those interventions are given influence the effectiveness. For example, if the intervention is given face to face, videos, written materials, pictorial or web-based materials.

Audiovisual as educational method showed greater improvement in correct use of an inhaler as well as clinically improvement of physical and emotional functioning. However, there no differences in knowing the types of inhaler. The effect of audiovisual on patients' confidence in managing the disease improve patient self-management practices using video but it does not improve self-efficacy. For example, none had shown an improvement in "being informed" to self-manage their COPD. But the difference between the results is unclear. More research with larger groups and different ethnicities should be carried out (Poureslami et al. 2016; Nguyen et al. 2018 and Stellefson et al. 2009.)

Video is a good example of audio-visual education which is cost-effective and can be used for group or individual teaching. However, the language should be simple and understandable. It is beneficial if different languages can be selected and video paused for explanations as much as needed. Individual face to face education is effective when both

the care provider and the patients understand the same language. But it is time consuming and the environment where the education is given can have a bias. Group interview is cheap and time preserving as it lots of people are educated at the same time. Its efficiency for different patients can differ considerably since not all the patients receive the messages in a same way.

Telehealth is the use of digital information technology to access health care service. It is not a new concept in this field but just have become more common and developed than before. For example, telephone calls counselling, personal assisted devices and computers education have become a way to address people in rural or isolated communities. Telehealth has many advantages including: access to medical specialists/health care professionals; Improve coordination of care between health care professionals and patients and increase support for self-management. However, there are some disadvantages to consider which are overuse of medical care, incorrect use of medications and unnecessary care. In the studied articles, further research will be needed to examine individual preferences as well as understanding the factors contributed in participants' own mode of communication. This may help to identify mechanisms increasing acceptability, participant motivation and behavior (Nguyen et al. 2008; Ashmore et al. 2013; Sidhu et al. 2015 and Coultas et al. 2016.)

6.2 Validity

Validity is the relation between the accuracy of the data and its analysis. A literature review checklist was used continually to evaluate articles, ensure consistency and reduce biases as recommended by (Vergnes, Marchal-sixou, Nabet, Maret & Hamal, 2010.) In this thesis, the researcher worked in an ethical and respectable manner by showing precisely from beginning to end how the whole thesis progress involved. The results were written from the chosen articles not from experience or expectation, which make the work valid and trustworthy.

External validity is whether the reader can get similar results by following the accurate method done step by step (LoBiondo-Wood and Haber 2006). As this work has been done by one people, there wasn't a chance a redo to see if the results will be same. However, the internal validity didn't have any bias as the intervention was done exactly the same way all the time by the same person.

Two scientifically popular databases, CINAHL and PubMed were used, which give a deep and more recent selection of research articles compared to books (Parahoo 2014). Variety of academic sources increases credibility, reliability and objectivity if gathered from trusted journals. Only quantitative data were used as well as English language articles to show effectiveness of the intervention using measurable scale and well understanding of the articles chosen.

6.3 Ethical consideration

This literature review adapts with the ethical regulations and guidelines made by the Finnish Advisory Board on Research Integrity (TENK). The data were collected in an accurate way using reliable sources. Citations and referencing were properly documented to check for reliability and avoid misinterpretation of the data. The journals and articles used are evidence based and exclude studies with ethical insufficiencies or discussion part to consider ethical issues involved in the studies. The thesis was presented in an accurate, fair and honest way. Falsification, plagiarism and any other form of misconduct were avoided. There was no need for informed consent as there was no direct contact with people. The permission to use those scientific data was given via Metropolia University of Applied Science which is committed to ethical research conduct (Finnish Advisory Board on Research Integrity 2014). This thesis took into consideration the principles of nursing ethics such as beneficence, non-maleficence and justice (Maltby, Williams, McGarry & Day 2010:348-349.)

7 Conclusion

Self-management education in audio-visual format is culturally and linguistically relevant and nowadays with advanced technology, it is possible to change languages or add subtitles to videos. Pulmonary rehabilitation is very effective in the self-management of COPD but in case it is problematic to travel to the rehabilitation centre, tele-rehabilitation and web-based education are available. Physical activity is proven to decrease the symptoms of COPD such as shortness of breath and emotional functioning such as anx-

iety and distress. Smoking as a common cause of COPD is decreased using the motivational interview to educate patients and let them help them find a motive to stop smoking. Correct use of inhaler and medication management were as well discussed.

Patient education is a complex and substantial part in nursing. A very powerful skill that helps in maintaining the principles of nursing ethics such as autonomy, beneficence, non-maleficence and justice. Patient education helps promote health, prevent diseases and bring joy to someone's life (better quality of life). Patient education is something every nurse must deepen their knowledge about by regular training and extra education. Regular update of knowledge is essential for a competent and caring health care professional. Although some of the interventions were time consuming and expensive such as face to face rehabilitation, there are effective in improving self-management and reduce hospitalization. Others as telehealth, makes services more available and convenient for people with limited mobility, time and transportation. But the benefits of telehealth services may be limited as some people who would benefit most from improved access to care may not have regional internet availability or money for mobile devices.

In conclusion, due to a growing number of patients suffering from COPD, it is important to understand better the efficiency on how the self-management practices can be learned. More efficient interventions can improve patients' life, reduce hospitalization and mortality. This study demonstrated that there are differences in how patients adopt self-management practices and gave some indications which the best methods could be. It showed, nevertheless, that more research is needed particularly with audio-visual interventions to make sure that they'll make an impact on patient's welfare.

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Analysis of the articles

Table 1. Data extraction form

Title	Authors, year, country	Purpose or aim of the study	Participants and method	Results or findings
The effect of home-based pulmonary rehabilitation on self-efficacy in chronic obstructive pulmonary disease patients.	Khoshkesht et al.2015 IRAN	To investigate the effect of pulmonary rehabilitation on the self-efficacy of patients with COPD	Randomised case-control trial with 66 patients divided into intervention (34 patients) and control group (32 patients).	There was an improvement in self-efficacy in intervention group.
Randomized controlled trial of an internet-based versus face-to-face dyspnea self-management program for patients with chronic obstructive pulmonary disease: pilot study.	Nguyen et al. 2018 USA	To test the efficacy of two 6-month dyspnea self-management programs, Internet-based and face-to-face on dyspnea in people living with COPD.	50 participants with moderate to severe COPD who were current Internet users to either the internet intervention or face to face intervention.	Self-reported endurance exercise time, physical functioning, and self-efficacy for managing dyspnea showed positive improvements in reducing dyspnea with activity of daily living in the short term.
<u>Chronic obstructive pulmonary dis-</u>	Ashmore et al. 2013 USA	To determine if a self-management lifestyle physical activity interven-	304 patients are recruited from clinics of the University of Texas Health Science	Primary outcomes include change in Chronic Respiratory Questionnaire (CRQ) dyspnea domain and

<p><u>ease self-management activation research trial (COPD-SMART): design and methods</u></p>		<p>tion would improve physical functioning and dyspnea.</p>	<p>Center-Tyler and equally randomized into either physical activity self-management or usual care.</p>	<p>6-minute walk distance measured at 6-, 12-, and 18-months after randomization. Secondary outcomes include improvement in level of fatigue, emotion level as well as health care utilization.</p>
<p>Patient self-management in primary care patients with mild COPD – protocol of a randomized controlled trial of telephone health coaching.</p>	<p>Sidhu et al. 2015 UK</p>	<p>To establish the effectiveness of nurse-led telephone health coaching to support self-management in primary care for people who report only mild symptoms of their COPD compared to usual care.</p>	<p>A multi-centred randomised controlled trial with 556 COPD patients confirmed by spirometry with follow up at six and 12 months. The intervention focuses on taking up smoking cessation services, increasing physical activity, medication management and action planning and is underpinned by behavioural change theory</p>	<p>The effectiveness of a novel telephone health coaching intervention improves outcomes and delay disease progression among people with mild COPD.</p>
<p>A Lifestyle Physical Activity Intervention for Patients with Chronic</p>	<p>Coultas et al. 2016 USA</p>	<p>To determine effectiveness of a behavioral intervention intended to increase daily</p>	<p>A randomized trial among patients with COPD in primary care and pulmonary clinics.</p>	<p>6-minute-walk distance remained stable among patients in the intervention group with moderate</p>

Obstructive Pulmonary Disease. A Randomized Controlled Trial.		physical activity with the goal of improving health-related quality of life and functional performance.	A total of 325 patients were enrolled, with 156 randomized to receive usual care and 149 to the intervention group over 20 weeks.	spirometric impairment but declined among usual care patients with moderate spirometric impairment. Overall, lowering hospitalization prevalence.
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.	Poureslami et al. 2016 Canada	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.	A randomized controlled trial with 91 patients recruited from outpatient clinics and divided into three intervention groups with audiovisual educational interventions and one control group (pamphlet).	All three intervention groups compared with control subjects, showed improvements in inhaler technique, preparedness to manage a COPD exacerbation, ability to achieve goals in managing COPD and understanding pulmonary rehabilitation procedures.
A randomized controlled trial of telephone-mentoring with home-based walking pre-	Cameron-Tucker et al. 2016 Australia	To evaluate telephone health-mentoring targeting home-based walking (tele-rehab) compared to usual waiting time	65 people with COPD were randomized to tele-rehab (intervention) or usual care (controls). Tele-rehab delivered by trained nurse	Of 65 recruits, 25 withdrew before completing pulmonary rehabilitation. 40 attended education sessions. 17 attended supervised exercise. There was

ceding rehabilitation in COPD.		(usual care) followed by group pulmonary rehabilitation.	health-mentors supported participants' home-based walking over 8-12 weeks.	no significant improvement in 6MWD between the groups.
Self-Management Support Using a Digital Health System Compared with Usual Care for Chronic Obstructive Pulmonary Disease: Randomized Controlled Trial.	Farmer et al. 2017 UK	To determine the efficacy of a fully automated Internet-linked, tablet computer-based system of monitoring and self-management support in improving quality of life and clinical outcomes.	A total of 166 patients were randomized into two groups for 12 months: 110 patients in intervention and 56 in usual care. The primary outcome was COPD-specific health status measured with the St George's Respiratory Questionnaire for COPD (SGRQ-C).	The risk of hospital admission decreased in intervention group compared with usual care. As well as generic health status improved for intervention group.
Health coaching to improve self-management and quality of life for low income patients with chronic obstructive pulmonary disease (COPD): protocol for a	Huang et al. 2017 USA	To evaluate the efficacy of health coaches in promoting patient self-management of disease and improve quality of life for patients with moderate to severe COPD.	A multi-site, single blinded, randomized controlled trial was conducted on 190 patients over 9 months. The intervention focuses on enhancing disease understanding and symptom awareness, improving use of inhalers; making	There was a minimally important clinical difference in Short Form Chronic Respiratory Disease Questionnaire dyspnea domain score and number of exacerbations.

randomized controlled trial.			personalized plans to increase physical activity, smoking cessation, or otherwise improve disease management; and facilitating care coordination.	
Effect of a Motivational Interviewing-Based Health Coaching on Quality of Life in Subjects With COPD.	Rehman et al. 2017 USA	To pilot test a simple, telephone-based health-coaching intervention that was recently shown to decrease readmission among hospitalized COPD patients and stable COPD patients eligible for pulmonary rehabilitation.	Fifty subjects received a 3-month intervention consisting of 10 health-coaching telephone calls based on motivational interviewing principles. Outcome measures included dyspnea level, quality of life and a single-item general self-rated health status.	Dyspnea measured by the modified Medical Research Council score, the domains of fatigue, emotional function, and mastery on the Chronic Respiratory Disease Questionnaire and the single-item quality of life question also improved significantly after the 3 months of health coaching.
Examining the efficacy of DVD technology compared to print-based material in COPD self-management education of rural patients.	Stellefson et al. 2009 USA	To measure and specifically compare the effect of three COPD self-management education dissemination strategies on relative differences in generic and disease-specific information	A quota sample of 101 patients was contacted to participate in this pilot study and selected patients were sent, via postal mail, a detailed study description ap-	The mean number of views of educational materials over the two-month period was not statistically significantly different across the treatment groups. Yet, DVD group participants reported clinically sig-

		needed and COPD self-management self-efficacy among a rural population of clinic patients.	proved by a human subjects committee, an informed consent document, and pretest instruments.	nificant improvements in physical and emotional functioning vs text educational materials.
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