Title of the project:

Effectiveness of a structured comprehensive intervention to favour self-management and to improve health-related quality in patients with chronic obstructive pulmonary disease (COPD) in primary care. A randomized controlled study

Date: 29/3/2017

ABSTRACT

Background: Chronic Obstructive Pulmonary Disease (COPD) is a problem of public health of great magnitude, increasing morbidity and mortality and of high cost both in health resource consumption and in loss of quality of life related to health (HRQL). The "comprehensive approach to this complex illness, promoting self-care, improves HRQL and the clinical situation of patients, as shown by several studies, but more studies are needed to corroborate these results in the" Primary Care Area " (PC), and to make clear recommendations about the most effective type of intervention.

Hypothesis: In patients with moderate to severe COPD, a self-care structured intervention is more effective than the usual intervention on the main variables associated with the disease: HRQL, pulmonary function, exacerbations, hospital admissions, in the setting of PC in a follow-up of 6, 12 and 24 months

Objectives: To evaluate the impact of a comprehensive intervention to promote self-care and improve HRQL in people with COPD in PC.

Methods: Randomized clinical trial multicentre with and control group, carried out at PC centers of Barcelona.

Determinations: specific questionnaires, standardized and validated, such as the St George's Respiratory for HRQL.

fferences between groups and variance of repeated measures (ANOVA) will be used to evaluate the effect of the intervention.

Expected results: Significant improvement in HRQL in patients with COPD attributable to the intervention performed.

Applicability and Relevance: The intervention could be incorporated into regular clinical practice with standardized contents.

STUDY PROTOCOL

1. BACKGROUND

Chronic Obstructive Pulmonary Disease (COPD) is characterized by a chronic progressive air flow limitation which is not reversible and mainly associated with tobacco smoke. It is an illness that can be prevented and treated, with systemic involvement and usually accompanied by comorbidity.(1-7)

In recent years, COPD has been defined not only as a pulmonary obstructive disease but also as a disease with systemic repercussion, and phenotypes have been recognized depending on the clinical presentation. (1-9)

COPD is a public health problem of great magnitude, with high morbidity and mortality and a high health cost. The condition is under-diagnosed and its prevalence is expected to continue to increase. (8-9)

The study of global burden of the disease (Global Burden of Disease Study-GBD-) targeted globally,has detected an increase of people with COPD compared to 1990 of almost 120 million.(10)

In Spain, the IBERPOC study reported a prevalence of COPD of 9.1% among the population aged 40-69 years, with a high level of underdiagnosis: 78.2%. The "EPI-SCAN study" estimates the prevalence in the population of between 40 and 79 years in 10.2% with a 73% underdiagnosis .(11)

The mortality rate of COPD, according to the GBD of the WHO, went from the fourth place in 1990 to the third place in 2010.(10) In Spain, according to data from the Carlos III Health Institute, COPD is the fifth cause of mortality.(12) In Catalonia, according to data from the Department of Health 2009 COPD

is the third cause of death.(13)

COPD is associated with a high cost in both health resource consumption and a loss of quality of life related to health (HRQL).In Spain, according to the Ministry of Health and Consumption-2009, "the estimated direct, indirect and intangible costs of COPD are estimated at 750-1000 million euros / year. The average direct cost per patient is 1,712-3,238 euros / year distributed between 40-45% hospital costs, 35-40% in drugs and 15-25% in diagnostic tests. (14)

In Catalonia, according to the Catalan Health Service-2004, direct costs are estimated at 238.82 million euros / year. It originates 10-12% of the consultations in primary care, 10% of visits to pneumology and is the third cause of hospitalization (more than 12% of patients require patients a hospital admission every year and almost 25% of them an annual consultation. (15).

Given the complexity of the disease, a multidimensional approach allowing an integrated approach to control symptoms, slow down progression and reduce the number of exacerbations, is needed , with the aim of improving the prognosis and quality of life of people affected Comprehensive care includes health education, rehabilitation, the promotion of self-care and the involvement of the patient in decision-making. (15)

Comprehensive care, according to the Terminology of Chronicity (TC), involves the complete interpretation of the human being and incorporates the promotion, prevention, recovery and rehabilitation to guarantee the global management of the person's needs, taking into account the multidimensional assessment (physical, emotional, cognitive, functional, social, ecological, spiritual and ethical aspects). (16)

Self-care is a term applied to educational programs aimed at acquiring the necessary skills to perform the specific therapeutic regime for the disease, guide the healthy behavioural change and provide emotional support to patients for the control of their illness and for living a functional life (17.18)

According to the Cochrane (RS) systematic review on "Self-care education for patients with COPD" (08/2007): "In COPD the value of self-care education is still unclear / .../ data is not enough to make clear recommendations about the form and contents of the self-care education programs for patients with COPD. " (19)

A new systematic Cochrane review (2014) concluded that interventions where self-care is promoted are associated with a better HRQL, a reduction in hospital admissions and an improvement in dyspnea scale, without finding significant differences in other parameters. However, the heterogeneity of the studies makes it difficult to make clear recommendations about the types of intervention in the self-care of COPD, and a review of the studies included demonstrates that there is little evidence within the scope of primary care.

There is an obvious need to carry out more large randomized clinical trials with long-term follow-up, before more conclusions can be made. (20)

The Catalonia Health Plan 2010-2015 already contemplated the need to implement structured clinical processes for COPD with guides and defined care routes, and reinforced the role of Primary Care in chronic care. It also emphasized the importance of strengthening patients' self-responsibility: "especially from Primary Care, measures should be provided to raise awareness of patients and caregivers, taking into account self-care opportunities ".

The new Health Plan of Catalonia 2016-2020 gives continuity to the previous one, emphasizing also the self-responsibility and self-care of people to achieve greater autonomy, a higher degree of compliance and facilitate shared decision-making. One of the 11 goals and priorities of health, emphasizes the personalization of care in

respiratory diseases: “By 2020 a model of personalized medicine for COPD will be implemented in Catalonia. (21)

2. HYPOTHESIS AND OBJECTIVES

Hypothesis: In patients with moderate to severe COPD, structured intervention in self-care is more effective than usual intervention in the main variables associated with the disease: quality of life, pulmonary function, exacerbations, hospital admissions, and primary care visits in a follow-up of 6, 12 and 24 months.

Overall objectives: To evaluate the impact of a comprehensive intervention to promote self-care and to improve the quality of life in people with Chronic Obstructive Pulmonary Disease (COPD) in Primary Care (PC).

Specific objectives: 1.- To describe the profile of patients with COPD in our area through the main sociodemographic characteristics (sex, age, level of studies), risk factors, COPD phenotypes, respiratory function, prognosis, pharmacological treatment, technique inhalation, exacerbations and hospital admissions, comorbidities, and quality of life.

2.-To assess using a clinical trial the effectiveness of a self-care program on different dimensions of clinical importance in COPD (degree of dyspnoea, prognosis, number of exacerbations, number of hospital admissions, degree of anxiety and depression).

3. METHODOLOGY

Design: Multicentre randomized clinical trial

Reference population: Patients with a diagnosis of moderate-severe COPD treated with inhaled bronchodilators.

Study population: Patients with a diagnosis of moderate and / or severe COPD , with bronchodilator treatment in PC Centers, that meet the criteria for inclusion in the study.

Inclusion criteria: Patients who have been visited at least once last year at the center with diagnosis of COPD (J44), with a moderate airflow limitation (FEV1 between 50% - 80%) or severe airflow limitation(FEV1 between 30 % - 50%), treated with bronchodilators, and who accept to participate in the study.

Exclusion criteria

- Patients only receiving home attention (Z74)

- Patients with mental disorders and / or severe mental disorders that do not allow following the sessions

- Patients diagnosed with asthma, tuberculosis or other chronic respiratory diseases

- Patients receiving chronic home oxygen therapy (OCD).

- Patients with terminal disease.

Sample size and sample procedure: Accepting an alpha risk of 0.05 and a beta risk lower than 0.2 in a bilateral contrast, 182 subjects in the first group and 182 in the second are need to detect a difference equal to or greater than 3.51 Units in the St George's Respiratory Questionnaire. It is assumed that the common standard deviation is 11.33. A follow-up loss of 10% has been estimated. Patients will be contacted by phone, via sms, internet or at office consultation (according to the authorization given to the e-CAP) by offering participation in the study and a visit will be scheduled to explain the study and to obtain the signed informed consent and the collection of data.

The random distribution to the groups will be carried out centrally, through a computer program that generates the random numbers managed by a remote investigator to recruiters. The allocation of each patient will be hidden in an envelope that will be opened when the professional has confirmed that he complies with the selection criteria and the patient has signed the informed consent.

Variables

-Quality related to Health (QVRS) will be measured with specific and standardized self-administered questionnaires, validated by our environment:

• St. George's Respiratory Questionnaire (SGRQ) 22. It is divided into three subscales: symptoms (eight items), activity (16 items), and impacts (26 items). For each subscale and for the general questionnaire, the scores range from 0 (without deterioration) to 100 (maximum deterioration).

• COPD Assessment Test (CAT) 23. It consists of 8 questions with 5 possible answers valued from 0 to 5 (values close to 0: better health status)

-Pulmonary function: it will be measured with forced spirometry with a bronchodilatation test. According to a FEV1 / FVC ratio <70% and the FEV1 post bronchodilatation, patients will be classified in COPD: MILD FEV1> 80%; MODERATE: 50% - 80%; SEVERE: 30% -50%; VERY SEVERE: <30% 24.

-Dyspnea: Quantified by the modified scale of the Medical Research Council (mMRC) 25. It is part of the BODEx index (26).

-Pronostic: BODEx index (26). This index that can be scored from 1 to 3, depending on the variables: body mass index, FEV1, dyspnea (mMRC25 scale) and severe exacerbations of COPD.

-Anxiety and depression: they will be measured with the Goldberg's anxiety-depression scale (27).

-Hospital admissions in the last year (computerized medical history review).

Independent and confusing variables:

- Socio-demographic variables: age (date of birth), gender and level of studies.

-Date of diagnosis of COPD.

-Phenotype: non exacerbator; asthma- COPD; exacerbator with emphysema; exacerbator with chronic bronchitis (1).

Pharmacological treatment:

-Type of treatment: LABA, LAMA, LAMA + LABA, CI, SABA, SAMA, roflumilast.

-Pharmacological compliance: Assessed by the Morisky-Green test (28) that provides information about the causes of non-compliance. It consists of 4 questions with dichotomous response that must be introduced to the normal conversation with the patient.

Inhalation technique: practical test evaluating step by step the technique according to SEPAR and SEMFYC (29)

Comorbidities: hypertension, diabetes mellitus II, dyslipidaemia, depression and anxiety, joint disorders, cardiovascular disease, cardiovascular risk.

Tobacco: Not Smoker / Smoker / former smokers. Yes smoker or ex-smoker: no packages / year. If you smoke number of cigarettes / day. Nicotine dependence (Fargeström) (30), Motivation for change (Richmond) (31) and Phase of change (Prochaska and DiClemente) (32).

Alcohol: BU/week

Working exposure

Environmental exposure ambiental (contamination, tobacco...)

-Other variables:

-Degree of participation in the intervention: 1 session/ 2 sessions/ 3 sessions/ ≥ 4 sessions

All the variables studied will be collected at baseline, prior to the intervention, and at 6, 12 and 24 months later, both in the intervention and in the control groups.

The control group will follow the usual treatment and follow-up and a visit will be scheduled to obtain the same variables as the intervention group, on a first visit, and at 6 ,12 and 24months.

Collection of data and sources of information:

Data analysis: Analysis will be carried out by intention to treat basis. All patients who signed their informed consent and who have completed the initial evaluation will be included in the analysis. The descriptive statistics of dependent, confusing and general variables will be calculated, both for the intervention group and for the control group and the homogeneity of the two groups for these variables will be checked at the beginning of the study. In all cases, a bilateral alpha error of 0.05 will be considered and the confidence intervals will be calculated at 95%. A variable will be calculated for each

measurement time (baseline, 6 months post-intervention and 12 and 24 months), which is the difference between the result of SGRQ and the other dependent variables of interest in each cut and the initial value, for each individual. Differences between groups and the confidence intervals of the difference to 95% will be calculated. An analysis of the variance of repeated measures (ANOVA) will be performed to evaluate the differences in time of dependent variables attributable to the effect of the intervention. It will adjust for the possible confusers, comorbidity, other interventions carried out, among others.

Difficulties and limitations of the study: This is a clinical trial in which health professionals who usually see the subject of study can know the group to which the patient belongs. They will "try to preserve masking in some important stages of the study:random allocation, evaluation of the main measures, statistical analysis of the data. On the other hand, the duration of the study can lead to long term loss to follow-up . To ensure the patient's adherence telephone location will be performed (at least three attempts per appointment, if the patient has not indicated that he does not want to participate) when missing the intervention sessions and a quarterly reminder telephone contact.

Ethical considerations and Confidentiality of the data

This study will follow strictly the current regulations and national regulations related to the ethics committees and data protection rules.

All recruited patients will be informed verbally and in writing of the objectives, methodology, tests and interventions they will receive if they participate in the study, and asked to sign informed consent. This document will be written in a language understood by the patient. The information will be treated anonymously. No user identification data will be computerized, and the whole study will be developed in accordance with the rules of good research practices. The study will be submitted to the CEIC of the IDIAP Jordi Gol.

The processing, communication and assignment of personal data will be in accordance with the provisions of Organic Law 15/1999, of December 13, on the protection of personal data. According to what is established by law, the participant may exercise their right of access, modification, opposition and cancellation of data.

Additional procedures derived from the study

Group intervention: 4 to 6 visits will be scheduled withthe reference nurse, 20 "in duration and separated 15 days.

Contents: Knowledge of the disease. Healthy lifestyle habits. Correct technique for the use of inhalers. Symptom control skills. Strategies for confronting the disease.

Specific contents: Behavioral change techniques, knowledge about COPD, adherence to the therapeutic plan (pharmacological and non-pharmacological), abandonment of the tobacco habit, alcoholic beverages, avoidance of environmental and working exposures, recommended vaccinations, inhalation techniques, knowledge about drugs used, basic respiratory exercises, energy saving techniques, relaxation techniques, recognition and performance of exacerbations, physical exercise enhancement, correct nutrition, sexuality.

The visits will be customized according to the clinical profile of the patient, the phenotype, the specific needs, their preferences and the stage of the change process in which he is found to be. All the sessions will be monitored by means of a specific track record where all activities / interventions will be collected, and the data collected (stage of the process of change, life habits: tobacco, diet, exercise, respiratory physiotherapy, inhalers ...). It will advise and facilitate attendance at the sessions of possible caregivers.

The behavioral components common to all the sessions will be: the setting of objectives, the motivational interview, providing feedback and behavioral cognitive therapy.

All learning will be based on educational material that will be provided to the patient: audiovisual, written educational material, links to web pages with useful and proven information (for example papsf ("Primary Health Care"), "the virtual nurse" or "caregiver") and, above all, the tutored practice of skills.

4. APLICABILITY AND PRACTICAL UTILITY OF THE RESULTS OF THE STUDY

Clinical Impact: The empowerment of the patient with COPD by facilitating his autonomy and self- responsibility will result in improved self-control of the disease and improvement in clinical outcomes. The application of knowledge from this research: structuring and standardizing the methods and contents of the nurse intervention in the COPD patient and their follow-up will also result in positive clinical outcomes.

Practical utility of the results: Adapting to our population interventions that have been shown to improve the quality of life and the clinical parameters of patients with COPD.

Scientific and socioeconomic relevance: This study will provide scientific evidence on the type of self- care intervention in patients with COPD in Primary Care that proves to be effective and will allow to formulate clear recommendations on ow to carry out this intervention by the nurse. On the other hand, the expected improvement in the quality of life and in the clinical parameters of the patients with COPD will contribute to reduce the expenses attributable to this disease, both in health and social resources (maintenance of functional life that will minimize the loss of working days , for example)

Bibliometric impact: We believe that this study could generate a minimum of 3 communications in scientific meetings and 2 publications.

Plan for the dissemination of results: The results of the study that provide relevant information, will be presented at conferences and will be published in national and international journals of nursing and medicine with great bibliometric impact.

Innovation and transfer plan: The design of nursing training in order to carry out the intervention in our study, in an online format, can be spread to all the nursing staff in our surroundings in a fast way, to apply the methods and contents that have been proven effective in the usual care practise. The majority of the tests used in the data collection of the project, which are useful at the time of the intervention as they complement the patient's assessment, allows us to offer a more personalized attention and are perfectly implementable in the clinical practise (e-CAP). The use of new technologies is contemplated as they are part of our day to day practise and most patients use them, as a reinforcement of personal attention to the query.

5.References

1.Grupo de Trabajo de GesEPOC. Guía de Práctica Clínica para el Diagnóstico y Tratamiento de Pacientes con Enfermedad Pulmonar Obstructiva Crónica (EPOC). Guía Española de la EPOC (GesEPOC).Arch Bronconeumol.2012;48(supl 1):2-58.

2.Chatila WM, Thomashow BM,Minai OA, Criner GJ,Make BJ. Comorbidities in chronic pulmonary obstructive disease.Proc Am Torac Soc [Internet].2008May 1[cited 2014 Nov 23];5(4)549-55. Available from:

http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=2645334&tool=pmcentrez&rendert ype=abstract

3.Cavaillès A, Brinchault-Rabin G, Dixmier A,Goupil F,Gut-Gobert C, Marchand-Adam S, et al. Comorbidities of COPD. Eur Respir Rev[Internet].2013 Dec[cited 2014 Dec 17];22(130):454-75. Available from:

http://www.ncbi.nlm.nih.gov/pubmed/24293462

4.Crisafulli E,Costi S, Luppi F,Cirelli G,Cilione C,Coletti O, et al.Role of comorbidities in a cohort of patients with COPD undergoing pulmonary rehabilitation. Thorax[Internet].2008 Jun 1[cited 2014 Dec 17];63(6):487-92. Available from:

http://thorax.bmj.com/content/63/6/487.abstract?ijkey=b5c0371496b47f1663997109a75049ef 3d8acb35&keytype2=tfipsecsha

5.Barnes P CB, Systemic manifestations and comorbidities in COPD. Eur Resp J.2009;33:1165-85.

6.Soriano JB SJC 12. How the COPD patient should be assesed for co-morbidities. En Rennard I, al , eds Clin Manag chronic Obstr lung Dis 2nd ed Bost Inf Healthc;2007.

7.Lenferink A,Frith P, van der Valk P, Buckman J, Sladek R, Cafarella P, et al. A self- management approach using self-initiated action plans for symptoms with ongoing nurse suport in patients with Chronic Obstructive Pulmonary Disease (COPD) and comorbidities: the COPD III study protocol. Contemo Clin Trials[Internet].2013 sep[cited 2014 Dec 17];36(1):81-9. Available from:

http://www.ncbi.nlm.nih.gov/pubmed/23770110

8.Pauwels RA, Buist AS, Calverley PM, Jenkins CR, Hurd SS. Global strategy for the diagnosis, management and prevention of chronic obstructive pulmonary disease. NHLBI/WHO Global Initiative for Chronic Obstructive Lung Disease (GOLD) Workshop summary.Am J Respir Crit Care Med[Internet]. 2001;163:1256-76. Available from:

http://www.ncbi.nlm.nih.gov/pubmed/11316667

9.Parker DR, Eaton CB, Ahern DK, Roberts MB, Rafferty C, Goldmas RE, et al. The study design and rationale of the randomized controlled trial:translating COPD guidelines into primary care practice. BMC Fam PRACT [Internet]. 2013 Jan[cited 2014;14:56. Avalaible from:

http://www.pubmedcentrel.nih.gov/articlerender.fcgi?artid=3651367&tool=pmcentrez&rendert ype=abstract

10.Lozano R,Naghavi M, Foreman K, Lim S,et al. Global and regional mortality from 235 causes of death for 20 age groups in 1990 and 2010: A systematic analysis for the Global Borden of Disease Study 2010.Lancet.2012.;380(9859):2095-128. Available from:

http://www.ncbi.nlm.nih.gov/pubmed/2324560404

11.Soriano JB, Ancochea J, Miravitlles M, García-Río F, Duran-Tauleria E, Muñoz L, Jiménez-Ruiz CA, Masa JF, Viejo JL, Villasante C, Fernández-Fau L, Sánchez G, Sobradillo-Peña V. Recent trends in COPD prevalence in Spain: a repeated cross- sectional survey 1997-2007. Eur Respir J. 2010;36:758-65.

12.Soriano JB, Miravitlles M. Datos epidemiológicos de EPOC en España. Arch Bronconeumol.2007;43(Supl1):2-9.

13.IDESCAT. http://www.idescat.cat/pub/?id=aec&n=285

14.Ministerio de Sanidad, Política Social e Igualdad. Plan de Calidad para el Sistema Nacional de Salud. Estrategia en EPOC del Sistema Nacional de Salud.[Internet]. Madrid. El Ministerio:2009.

http://www.msssi.gob.es/organizacion/sns/planCalidadSNS/docs/EstrategiaEPOCSNS.pdf

15.Guia MPOCfilmar Guia ICS_Gencat.cat

https://www.gencat.cat/ics/.../guies/.../guia_mpoc.pdf

16.TERMCAT.Terminología de la cronicitat.

http://www.termcat.cat

17. J. Bourbeau,M. Julien,F. Maltais,M. Rouleau,A. Beaupré,R. Bégin. Reduction of hospital utilization in patients with chronic obstructive pulmonary disease: a disease-specific self- management intervention. Arch Intern Med 2003; 163: 585-591

18. E. Monninkhof,P. Van der Valk,J. Van der Palen,C. Van Herwaarden, G. Zielhuis. Effects of a comprehensive self-management programme in patients with chronic obstructive pulmonary disease. Eur Respir J 2003; 22: 815-820

19.Disease-specific Health education for COPD: a systematic review of changes in Health outcomes.2007.(SYSREV-12007003344)

20.Revisión Sistemática Cochrane 2014. Self-management following an acute exacerbation of COPD: a systematic review (ID:SYSREV-12014063527).

21.Propostes per a l‟ elaboració del Pla de Salut de Catalunya 2016-2020.Pla de Salut. Quaderns. Número 1. Febrer 2015. Generalitat de Catalunya. Departament de Salut

22. Jones PW, Quirk FH, Baveystock CM, Littlejohns P. A self-completed measure of health status for chronic airflow limitation. The St. George's Respiratory Questionnaire. Am Rev Respir Dis. 1992 ;145:1321-7

23. Jones P.W, Harding G, Berry, Wiklund I, Chen W-H, Kline Leidy . Development and first validation of the COPD assessment test. Eur Respir J, 2009;34: 648 654.

24. Global Strategy for the Diagnosis, Management and Prevention of COPD 2013, Global Initiative for Chronic Obstructive Lung Disease (GOLD), www.goldcopd.org

25. Usefulness of the Medical Research Council (MRC) dyspnoea scale as a measure of disability in patients with chronic obstructive pulmonary disease. J.C. Bestall,E.A. Paul,R. Garrod,R. Garnham,P.W. Jones,J. Wedzicha JA. Thorax 1999;54:581- 85

26. Celli BR, Cote CG, Marin JM, Casanova C, Montes de Oca M, Mendez RA, Pinto Plata V, Cabral HJ. The body-mass index, airflow obstruction, dyspnea, and exercise capacity index in chronic obstructive pulmonary disease. N Engl J Med. 2004;350:1005-12.

27.Goldberg DP, Hillier VF. A scaled version of the General Health Questionnaire. Psychological Medicine 1979;9:139-145

28. Val Jiménez A, Amorós Ballestero G, Martínez Visa P, Fernández Ferré ML, León Sanromà M. Estudio descriptivo del cumplimiento del tratamiento farmacológico antihipertensivo y validación del test de Morisky y Green. Aten Primaria. 1992;10:767-70.

29. Consensus for Inhaled Therapies. Área de asma de SEPAR, Área de enfermería de SEPAR, Departamento de asma ALAT. Arch Bronconeumol. 2013;49(Supl 1):2-14

30. Fargeström T.F, Heatherton,L.T, Kozlowsky,R.C, Frecker,T, Baker,W, Whisler,K.O. The Fagerström test for nicotine dependence: A revision of the Fagerström tolerance questionnaire.Br J Addict 1991; 86 : 1119-1127

31. Richmond RL, Kehoe LA, Webster IW. Multivariate models for predicting abstention following intervention to stop smoking by general practitioners. Addiction. 1993; 88: 1127- 1135

32. Prochaska JO, Velicer WF, Prochaska JM, Johnson JL. Size, consistency, and stability of stage effects for smoking cessation. Addict Behav. 2004;29:207-13