Original Article

Effects of self-management education on quality of life of patients with chronic obstructive pulmonary disease

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\begin{abstract}
Purpose: To explore the effects of self-management education on the quality of life of patients living with chronic obstructive pulmonary disease (COPD).
Methods: Eighty-four stable or discharged COPD subjects were recruited from April 2011 to January 2012 following treatment at Beijing Hospital or Peking Union Medical College Hospital. Subjects were divided into an intervention group who underwent self-management education or a control group who received usual care without additional education (\(n = 42\) each). The St George’s Respiratory Questionnaire (SGRQ) was used to measure quality of life at three and six months.
Results: SGRQ impact domain scores revealed significant differences between the groups (\(t = -2.167, p < 0.05\)) at three months. SGRQ symptom, impact, activity domain and total scores revealed significant differences between groups (\(t = -3.482 \text{ to } -2.530, p < 0.05\)) at six months.
Conclusion: A nurse-led, simple, structured self-management education program provided an effective method for the management of patients with COPD.
\end{abstract}

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1. Introduction

Self-management refers to strategies by which patients can make therapeutic, behavioural and environmental adjustments built on health-related knowledge and skills from healthcare providers to improve their ability to care for themselves [1]. When living with chronic diseases, such as chronic obstructive pulmonary disease (COPD), patients should have the ability to care for themselves and live as
healthy of a life as possible. Current treatments for COPD delay progress; patients live for years with the illness having an effect on mental, physical and social aspects of their lives [2,3]. Health care providers advocate to strengthen the education and management of patients, hoping to improve adherence and ultimately change health outcomes [4]. A number of studies in several countries have evaluated the effect of self-management education on patients with COPD [5–8]. We have performed a nurse-led, controlled clinical trial to assess the effects of self-management education on the quality of life of patients with COPD.

2. Materials and methods

2.1. Subjects

From April 2011 through January 2012, 84 subjects, either recently discharged or currently in stable condition in the outpatient department, were recruited from Beijing Hospital and Peking Union Medical College Hospital by convenience sampling. Subjects were divided into an intervention group who underwent self-management education or a control group who received usual care without additional education. The intervention group and control group included 42 subjects each. All subjects met the following criteria: (1) diagnosis of COPD according to the Global Initiative for Chronic Obstructive Lung Disease (GOLD) criteria and have a forced expiratory volume in one second (FEV1)<70% [2,3]; (2) over 40 years old; (3) able to read and write Chinese words; (4) alert and oriented and available by telephone. Subjects were rejected according to the following exclusion criteria: (1) Any signs, symptoms, or diagnoses of cough, wheezing, asthma, bronchiectasis, pulmonary tuberculosis, pneumoconiosis, congestive heart failure, etc.; (2) suffering from serious disease, such as live cancer and heart failure; (3) dying or not providing informed consent.

2.2. Study protocol

This study was a non-randomized controlled trial. Subjects were grouped in chronological order with the intervention cohort selected on days 1–15 of a given month and the control cohort selected on days 16–31 of that same month. If the intervention and control subjects were assigned to the same hospital room, one subject had to be excluded according to grouped protocol. All subjects received the St George’s Respiratory Questionnaire (SGRQ) questionnaire and a health diary individually at three month and six months and returned both items by mail after being reminded by a study investigator.

2.2.1. Control group

Subjects in the control group were treated with usual care and managed by their respective respiratory physician and maintained normal access to provincial universal health plans, which included basic medical knowledge and education supplied by a nurse. However, the investigator did not give these subjects COPD specific knowledge, education or skills. If subjects or family members consulted health care services by phone, the investigator supported.

2.2.2. Intervention group

Subjects in the intervention group received a simple, structured, disease-specific self-management education plan for six months. Subjects’ family members were encouraged to take part. The program focused on self-management ability and was how best to deal with COPD. The program included four methods of self-directed education: Face-to-face teaching, telephone follow-ups, text messaging and diary recording. During forty minute face-to-face sessions, subjects learned respiratory techniques, medication adherence tips, and ways to recognize and prevent exacerbation. In addition, subjects were trained on how to make use of and maintain inhalation devices, breathing techniques, and maintaining proper position. Following these sessions, subjects received a booklet reviewing this information for self-education in the coming months. The intervention group also received standardized 15 min telephone calls at one, two, three and five months post-hospital discharge or doctor visit. The content of these telephone calls were based on the self-administered booklet; aimed to enforce self-management knowledge and skills and integrate those into subjects’ daily life. The investigator kept a detailed record of every call. Subjects in the intervention group, or their family members, received a weekly standardized text message following hospital discharge. The contents of these text messages were easy-to-understand and based on the self-management education program. All subjects in the intervention group kept a detailed healthy diary each month, including symptoms consisting of cough, sputum and dyspnoea, self-assessment, and medical history consisting of drug name, dosage, usage and instructions, and physician visit details. The diary was given to the investigator at three and six months.

2.3. Questionnaire

Demographic data such as age, sex, smoking history, and severity by GOLD stage were collected at the baseline. The SGRQ is a disease-specific health-related designed to measure impact on overall health, daily quality of life, and perceived well-being in patients with obstructive airway disease [9]. It includes 50 items and three domains: symptoms (respiratory symptoms), activity (physical activities limited by breathlessness) and impact (effects of disease on life), with Cronbach’s A coefficients of 0.74, 0.86, and 0.91, respectively [10]. Each domain scores range from 0 to 100, with higher scores indicating more limitations. A change of four units in the SGRQ score is considered the minimum clinically significant difference [11]. The SGRQ is valid and reliable in the Chinese population [12].

2.4. Ethical considerations

The ethics committee of Peking University Medical College approved this study. All eligible subjects signed written informed consents and had the right to withdraw at any point without any adverse effects in clinical care.
2.5. Statistical analysis

All data were entered in duplicate and data checking and analysis was performed with the Statistical Package for the Social Sciences (SPSS) software package, version 17.0 (SPSS Inc., Chicago, IL, USA). The significance of a difference found between the intervention and control group was assessed by $\chi^2$ test or independent $t$-test. A $p$-value of $<0.05$ was considered significant.

3. Results

3.1. Baseline characteristics of subjects

A total of 84 subjects were collected and divided evenly between control and intervention groups. The two groups were not significantly different at baseline (Table 1). Ten subjects did not complete the study during the six-month period. Five subjects were unavailable for data collection and one withdrew following a transfer to another hospital. Four subjects were excluded due to lost questionnaires or insufficiently completed diaries. However, no differences were found between those who dropped out of the study.

3.2. Health-related quality of life

Statistically significant differences were observed between the intervention and control groups at three months based on SGRQ impact domain scores ($t = -2.167, p < 0.05$; Table 2). In addition, statistically significant differences were also observed between groups at six months based on SGRQ symptom, impact, activity domain and total scores ($t = -3.482$ to $-2.530, p < 0.05$; Table 2).

4. Discussion

Results from this study showed that simple, structured, self-management education was capable of improving patients’ quality of life when at home. Subjects had better quality of life in intervention group than subjects in control group during...
three-month period; moreover, these differences were even more pronounced at six months. Effects of self-management education were not obviously apparent at three months but gradually increased as time passed up to six months. This is not surprising, as quality of life changes require time. The results of this study confirmed the similar findings by Bourbeau et al., [13,14] and demonstrated that patients who received health-related skills and knowledge through self-management education were encouraged to integrate them into daily life and actuate to positive and beneficial development. Thus, the effects of self-management were cumulative, and could be reached via a long-term process. The ultimate aim of self-management education is to help patients manage disease and maintain health lifestyles. Interestingly, other variables are involved when assessing symptoms including weather changes or air quality. In this study, subjects took measures to prevent or avoid symptoms exacerbated by these conditions, which indicated that self-management education provided patients abilities to face the disease, devise proper strategies and prevent the worsening of symptoms. Finally, with the intensity of self-management education reduced, patients’ quality of life was still in state of improvement. Once a patients’ belief in self-management is established, in other words, the belief of living well with COPD, improvements can be observed for long periods of time. The outcomes confirmed previous studies that showed that the state of improvement of quality of life in patients could be maintained for two years [15].

This study also showed that elements of self-management education were suitable and appropriate. Most of subjects in the study were elderly persons who had limited energy to take more activities because of limited lung function or other chronic diseases. Subjects provided that they were afraid when physical activities caused shortness of breath, so they sometimes avoided these activities. The researcher persuaded subjects to perform these activities in their daily lives using scientific medical theory. This intervention made subjects more confident that they could indeed live well with COPD.

The present study also demonstrated the way of self-management education was simple and could be easily implemented; with materials of self-management education widely and easily accessible. When subjects were at home, the investigator enforced and strengthened health-related skills and knowledge through telephone, text messaging and diary-keeping, which was economic and accessible because of phone popularity and subjects’ levels of knowledge.

This outcome was consistent with the study by Chen Lian et al., [16] who showed that improving patients’ cognition of disease was beneficial for medication adherence and maintaining an exercise program over the long term. Our study also confirmed and extended the findings by Chavannes et al., [17] who considered that self-management decisions education was made in advance, but it was still possible to bring forward deep cognitive feelings of patients through self-management education, providing strong confidence for patients to maintain health lifestyles. When compared with Chavannes et al., our study demonstrated that there are many pathways to achieve self-management education in variable structure and design. For example, our study focused on symptom management by having only one nurse in the study, not many disciplines, thus streamlining the process.

In summary, our study demonstrated self-management education can improve the quality of life of patients with COPD, and these effects can be maintained and improved with decrease intensity over time. This study also suggests that the investigator can rearrange and adjust the intensity of self-management education based on individual patient characteristics without affecting results, thus saving medical resources. However, more research is needed for verification in the future, including more comprehensive methods of self-management carried out in one or more interventions.

REFERENCES


