Mahidol University Journal of Pharmaceutical Sciences 2008; 35(1-4): 8-12.

Original Article

Outcome of Drug Counseling of Outpatients in Chronic Obstructive Pulmonary Disease Clinic at Thawangpha Hospital

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Abstract Chronic obstructive pulmonary disease (COPD) is a lung disease characterized by airflow limitation that is not fully reversible. The main underlying cause of the disease is tobacco smoking, which destroys the patient's bronchi and alveoli. COPD is a major public health problem in both developed and developing countries. There is much evidence to suggest that drug counseling may improve patient outcomes. The objective of this study was to compare the outcomes of drug counseling of COPD patients in experimental (received drug counseling) and control groups. The outcomes were knowledge about COPD, frequency of exacerbation, and quality of life. Patient knowledge was evaluated by a 10 item knowledge test about COPD, treatment and self-management. The frequency of the disease exacerbation was recorded. Patient quality of life was measured by the THAI version of the WHOQOL-BREF questionnaire which contains 26 items of five domains including physical, psychological, social relationship, environment, and quality of life overview. Knowledge about COPD, treatment and self-management of the experimental group were significantly higher than the control group ($p < 0.05$). The frequency of the disease exacerbation in the experimental group was significantly less than the control group ($p < 0.05$). The overall of quality of life between two groups was not different. However, the experimental group had higher scores than the control group, in physical domain ($p < 0.05$) and quality of life overview domain ($p < 0.05$). The study showed that the experimental group had better outcomes than the control group in terms of knowledge about COPD, treatment and self-management, frequency of the disease exacerbation, and two domains of the qualities, physical domain and the quality of life overview domain.

Keywords: COPD, drug counseling, pharmacy

INTRODUCTION

Chronic obstructive lung disease or chronic obstructive pulmonary disease (COPD) is characterized by airflow limitation that is not fully reversible.[1] The principal cause of the disease is tobacco smoking.[2] COPD is a major public health problem in both developed and developing countries. It was ranked as the sixth most common cause of death worldwide in 1990. In the future, the World Health Organization (WHO) estimates COPD to be 1 in 5 of non-infectious diseases and major causes of death. By the year 2020, it is estimated that COPD will be the third leading cause of death worldwide.[3] In Thailand, the estimated prevalence of COPD was 2,075 patients per 100,000 population and 33.5 deaths per 100,000 population in 1998. The COPD prevalence is expected to increase to 7,035 patients per 100,000 population by 2010.[4] Similar to other countries, COPD is also a major cause of death and a burden disease in Thailand. Management of COPD involves an avoidance of risk factors and pharmacotherapy. The goals of pharmaco-therapy include four components: (1) relieving symptoms, (2) preventing and treat exacerbations, (3) preventing disease progression, and (4) improving quality of life.

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Thawangpha Hospital is a 30 bed hospital with about 200 patient visits per day. This hospital has designated COPD clinic. There is team working between health care professionals such as physicians, pharmacists, and nurses. The pharmacist concerns not only the appropriate use of medicines but also conservative drug counseling, such as giving knowledge base, providing and suggesting medicines, especially expedient of using medicine which does not distinctly proceed. There is no evaluation knowledge and suggestion to COPD people for expedient of using medicine and quality of life. The object of this study was to examine the effects of drug counseling on an improvement of surrogate clinical outcomes and quality of life in COPD patients.

MATERIALS AND METHODS

Study Design

This study was designed as a randomized controlled trial study which compared knowledge about COPD, treatment and self-management, frequency of exacerbation and quality of life between the experimental group and the control group.

Study Patients

The target population was the COPD patients who came to COPD clinic at Thawangpha Hospital, Nan Province between January and February 2006. All study patients were definitely diagnosed COPD by the expertise physicians. The study protocol was approved by the Ethics Committee for Human Research of the host medical institution and informed written consent was obtained from all participants.

Interventions

Interventions were given only for patients in the experimental groups by a well trained pharmacist. Interventions included drug counseling, providing information about COPD disease, treatment, and self management, and providing brochure for self study. During a one-time drug counseling which lasted for approximately 30 minutes for each patient, the pharmacist had discussed with a patient in topics as follows; (1) medication names, (2) aims of medication use and the expected effects of treatment, (3) dose, route of administration, and periods of treatment, (4) medication storage, and (5) medication precaution and adverse drug reaction.

Outcomes and Data Collection

Study outcomes included knowledge about COPD, treatment and self-management, frequency of exacerbation, and quality of life. WHO Quality of Life-BREF Thai version (WHOQOL-BREF-THAI). These outcomes were measured at baseline and one month thereafter in both experimental and control groups.

Knowledge about COPD, treatment and self management was assessed by the treatment and self-management questionnaire. An exacerbation was defined as cough, dyspnea upon exertion two times in 1 month before and after receiving drug counseling. Frequencies of exacerbations were obtained within two-week period by the patient record form. The quality of life was evaluated by WHOQOL-BREF-THAI questionnaires.

Statistical Analysis

Data are presented as mean and standard deviation, or percentage, as appropriate. Differences within group were tested by paired *t*-test. Differences between groups were tested by independent *t*-test.

RESULTS

At baseline, the total number of study patients who gave informed consent was 94. The patients were randomized into two groups. Each group had 47 patients. The control group had 5 patients dropping out from the study. The experimental group had 15 patients dropping out from the study. Therefore, at the end of study there were 42 patients in the control group and 32 patients in the experimental group. The study flow chart is presented in Figure 1. There were no significant differences between groups in patient characteristics ($p > 0.05$) (Table 1).

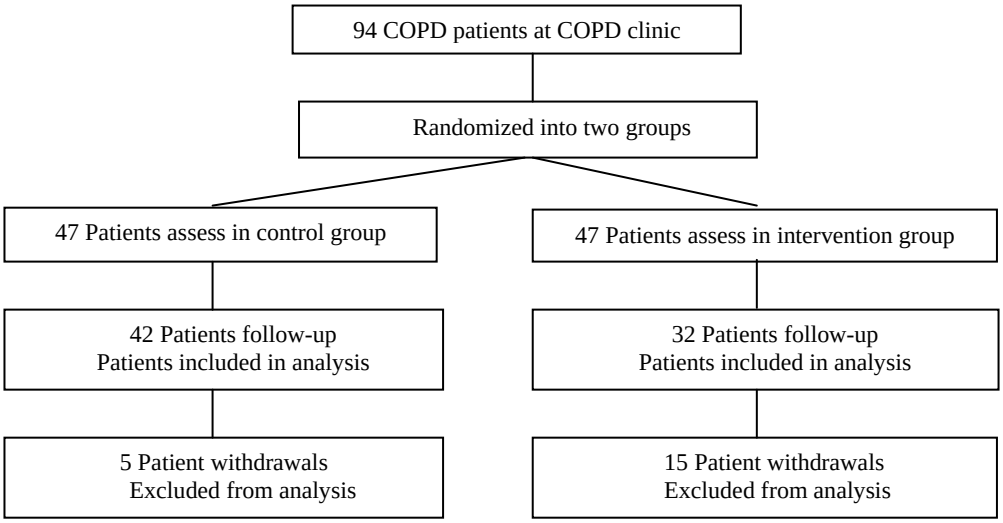

Figure 1. Study flow chart.

Table 1. Demographics of the study patients (n = 74)

Characteristics	Control (n = 42)		Experimental (n = 32)	
	No.	%	No.	%
Sex				
Male	20	47.6	20	62.5
Female	22	52.4	12	37.5
Age				
31-45 years	-	-	2	6.3
46-60 years	5	11.9	8	25.0
More than 60 years	37	88.1	22	68.8
Mean age (years) ± S.D.	68.69 ±9.40		66.34 ± 10.59	
Occupation				
No job	36	85.7	23	71.9
Seller or business	-	-	2	6.2
Agriculture	6	14.3	7	21.9
Smoking				
Yes	1	2.4	-	-
No	4	9.5	7	21.9
To be use	37	88.1	25	78.1
Alcohol drinking				
Yes	3	7.1	-	-
No	13	31.0	6	18.8
To be use	26	61.9	26	81.3
Co-disease				
No co-disease	42	100	30	93.8
Other	-	-		
Hypertension			2	6.2

There were no significant differences among the two groups.

At one month, patients in the experimental group had significantly higher knowledge about COPD and treatment and self-management scores than patients in the control group (p <0.05) based on comparisons between groups (Figure 2). In the experimental group, the scores of knowledge about COPD, treatment and self-management improved significantly (p < 0.05) after the interventions were given. In the control group, the scores of knowledge about COPD, treatment and self-management improved slightly after one month. However, there were no significant differences.

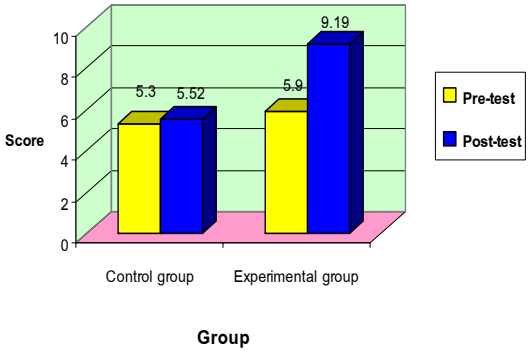

Figure 2. Knowledge mean scores of pre-test and post-test in both control and experimental groups. Patients in the experimental group had significantly higher post-test mean score than the control (p < 0.05).

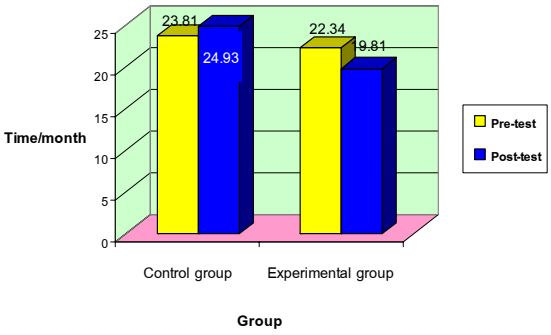

Figure 3. Mean frequency of exacerbation in both control and experimental groups. Patients in the experimental group had significantly fewer episodes of exacerbation than control (p < 0.05).

At baseline, the control group had frequency of exacerbations ranged from 10 to 50 times per month and follow-up the frequency of exacerbations ranged from 12 to 45 times per month (Figure 3). The mean frequency of exacerbation increased from 23.81 to 24.93 times per month, although the increase was not significant. The experimental group had frequency of exacerbation ranged from 10 to 40 times per month before receiving drug counseling. After receiving drug counseling, the frequency of exacerbation ranged from 10 to 35 times per month. The mean frequency of exacerbation decreased from 22.34 to 19.81 times per month (p < 0.05).

In terms of quality of life, most of patients in the control group (n = 31) had pre-test quality of life scores in the medium level (score = 61-95) and 11 patients evaluated their quality of life as good (score = 96-130). No patient evaluated quality of life in the lowest level (score = 26-60). All patients in the experimental group (n = 32) evaluated their pre-test quality of life scores in the medium level. From comparisons between groups, there were no significant differences in mean pre and post-test scores quality of life. Pre-test mean scores were lower than post-test in every domain. However, there were significant differences in physical domain (p = 0.01) and quality of life overview domain (p = 0.04).

DISCUSSION

The study population was COPD patients in COPD clinic at Thawangpha Hospital, Nan Province. At baseline, 94 patients agreed to participate in the study. Five patients in the control group were withdrawn from the study because of lost to follow-up. Fifteen patients in the experimental group were withdrawn because of lost to follow-up (n = 14) and refused follow-up (n = 1). Therefore, there were 74 patients who remained in this study at one month follow-up. Their ages ranged from 34 to 85 years. Thirty-two of them were in the experimental group (drug counseling) and 42 of them were in the control group (no drug counseling). This study compared outcomes of drug counseling in COPD patient in both groups. The individual patient was followed up every 1 month while patient was enrolled the study or was made an appointment by physicians. The majority of

patients were male (55.5 %). However, there was no significance between groups. The fact that Thai males smoke more than females is consistent with National Center for Health Statistics,[5] and higher prevalence of COPD in males than females was found. The knowledge about COPD, treatment and self-management, patients in the control group scored less than the experimental group and this was consistent with a previous study by Roughead *et al.*[6] However, the impact of drug counseling on knowledge about COPD, treatment and self-management questionnaire may not be captured because the reliability of the questionnaire in this study was shown to be less than 0.7.

Patients in the control group had higher mean frequency of exacerbation than the experimental group. An improvement in appropriate self-management behaviors in COPD patients was a factor related with a decrease of the frequency of exacerbation. Findings from this study were consistent with Weinberger *et al.*,[7] which found that patients receiving pharmaceutical care had significantly lower frequency of exacerbation than usual care group ($p < 0.05$).

In terms of quality of life measured by WHOQOL-BREF-THAI version, COPD patients in the control group had lower quality of life score than the experimental group in every domain. However, the psychological domain and social relationship domain were not significant difference between the control and the experimental group. This was consistent with Weinberger *et al.*,[7] which found that health related quality of life (HRQOL) was not significantly different when compared between patients receiving pharmaceutical care and patients receiving usual care. On the other hands, Tomas and Varkey[8] and Hughes *et al.*[9] found that pharmaceutical care can improve quality of life in COPD patients. From this study, the impacts of COPD patient on quality of life were not found. It is possible that WHOQOL-BREF-THAI version may not capture quality of life problem related to COPD exacerbation because reliability of the WHOQOL-BREF-THAI version in this study was shown to be less than 0.7.

CONCLUSION

This study showed that the pharmacist could improve clinical outcomes such as, knowledge, frequency of exacerbation, and two domains of the qualities, physical domain and the quality of life overview domain.

ACKNOWLEDGEMENTS

This research was granted by Mahasarakham University in the year 2006, and Thai Health Promotion Foundation.

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