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Original Article

The Effect of Education and Motivational Interviewing on COPD Management and Outcome Parameters in COPD Patients

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Abstract

OBJECTIVE: Chronic obstructive pulmonary disease (COPD) is an important health problem. The disease management consists of avoiding risk factors, therapy for maintenance of disease stability, and prevention and treatment of exacerbations. Patient education and motivational interviewing are thought to be effective approaches in disease management. This study aimed to investigate the effects of repeated education and motivational interviewing conducted by a multidisciplinary team, and the outcomes in COPD patients.

MATERIAL AND METHODS: This was a randomized controlled study. The study included 40 COPD patients (21 cases and 19 controls) hospitalized for exacerbation of COPD between June 2015 and June 2017. The patients were randomized in a ratio of 1 : 1 based on age, gender, and socioeconomic status. After a baseline assessment for all patients, patients in the study group were subjected to a total of 3 educational sessions and 4 motivational interview sessions through intermittent invitations over a period of one year. At the end of the first year, baseline assessment tests, the technique of drug use, the number of moderate/severe COPD exacerbations, and mortality status were evaluated for all patients.

RESULTS: There was no difference between the groups in terms of age, gender, and pulmonary function tests (FEV_1%, FEV_1/FVC) and partial oxygen and carbon dioxide pressures (pO_2 and pCO_2). At the end of the 12 months, there was a statistically significant difference between the groups in terms of the levels of theoretical knowledge of COPD and the Morisky scale scores. All patients in the study group survived, whereas 4 patients died in the control group, with a statistically significant difference between the 2 groups.

CONCLUSION: One-to-one education and motivational interviews (MI) on COPD, which are based on a multidisciplinary approach, are proposed, because they increase the level of knowledge of the disease and adherence to treatment, and have positive effects on mortality rates.

KEYWORDS: COPD, patient education, multidisciplinary care, motivational interviewing, exacerbation
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INTRODUCTION

Chronic obstructive pulmonary disease (COPD) is an important public health problem with an increasing prevalence worldwide and in Turkey, leading to a high rate of hospitalization, disability, economic burden, and mortality.[1,2]

Currently, COPD is considered a preventable and treatable disease. The management of the disease consists of avoidance of risk factors, therapy to maintain the stability of the disease, prevention, and treatment of exacerbations.[3,4] Despite all current treatment modalities, COPD is still a cause of significant morbidity, with low rates of treatment compliance and a current smoking rate of 50%.[5-7]

The complexity of COPD treatment, comorbid conditions, advanced age, and decrease in mental functions reduce treatment compliance and cause difficulties in the management of the disease.[8] Therefore, the issues discussed in the studies include combining standard pharmacological therapies with nonpharmacological approaches in current guidelines, interventions to improve treatment compliance, and effective treatment of comorbid diseases.[9] Having knowledge about the disease and acquiring new skills are very important for ensuring compliance with the treatment.[10]

Studies have shown that patient education has positive effects on dyspnea, fatigue, emotional state, oxygen saturation, and forced expiratory volume in 1 second (FEV_1).[11-14] Supporting patient education through motivational interviews (MI) is one of the most important strategies to achieve lifestyle changes in patients with COPD.[15]

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However, the lack of a standardized approach in these interviews, the inadequate number of health professionals, and insufficient time to provide this service diminish the applicability of MI for therapeutic purposes. Motivational interviewing techniques aim to address the main issues such as improving the ability of patients to recognize and express their feelings, increasing communication skills, ensuring the recognition of personal characteristics (good/bad), acquiring the ability to provide self-criticism, increasing the rates of compliance with treatment, and setting and achieving short-term and long-term goals.[16]

The aim of this study was to investigate the effects of education and MI conducted by a multidisciplinary team to support standardized treatments on primary (level of knowledge of the disease, symptom burden, adherence to treatment, and annual number of moderate/severe exacerbations) and secondary (mortality rate) outcomes in patients followed for COPD.

MATERIAL AND METHODS

Study Population

The study included literate patients who volunteered to participate in the study, who did not have a problem with communication, and who had no asthma, Alzheimer's, dementia, confusion, or other known psychosomatic disease, and were hospitalized for exacerbation of COPD between June 2015 and June 2017 at Gazi University Hospital Health Research and Application Center. The patients were randomized in a ratio of 1 : 1 based on these criteria.

Study Design

Data Collection Tools

COPD Assessment Test (CAT): CAT measures the impact of COPD and deterioration in health status.[17]

Standardized Mini-Mental Test (SMMT): SMMT is used to quantitatively assess cognitive performance.[18]

8-item Morisky Medication Adherence Scale (MMAS-8): The MMAS-8 is a scale that evaluates the self-reported adherence to medication.[19,20]

Assessment Form of Inhaler Technique (AFIT): AFIT includes the stages of use according to the types of inhaler devices.

Questionnaire of Theoretical Knowledge (QTK) on COPD: QTK on COPD evaluates the theoretical knowledge level of the patients before and after the education.

MAIN POINTS

- COPD is an important disease characterized by airway limitation and high morbidity and mortality rates.
- Patient education in COPD reduces the rate of attacks and mortality rate.
- Motivational interviewing in COPD increases patients' adherence to treatment and improves the outcome parameters of the disease.

Diagnostic Criteria for Psychosomatic Research (DCPR): DCPR evaluates psychiatric disorders and symptoms associated with medical disorders.[21]

Study Visits

All patients received standard medical care and treatment for exacerbation during hospitalization.

Randomization and Baseline Assessment for All Study Populations (Visit 0)

The patients were assigned to the study and control groups at a ratio of 1 : 1, using simple stratified random sampling based on age, gender, and socioeconomic status. Written informed consent was obtained from patients who agreed to participate in the study. Baseline demographic data, functional parameters, symptom status (CAT), mental status (sMMT), treatment adherence (MMAS-8), and accuracy of inhaler drug techniques were recorded for all patients. At baseline, DCPR evaluations were completed for all patients. All baseline tests and assessments were performed in the 2 days prior to discharge following control of exacerbations.

Interventions for the Study Group

These patients were subjected to a total of 3 training sessions and 4 motivational interview sessions on COPD after baseline evaluation. Patients were evaluated primarily by an educator nurse and a psychiatric nurse. Subsequently, follow-up and treatment plans were established after a clinical examination by a researcher/physician.

First Interview (Visit 1)

On the day of discharge, each study patient personally participated in an interactive power-point presentation on the basics of COPD, which lasted about 30 minutes, provided by a qualified educator nurse. The presentation was prepared using the COPD education booklet from the Turkish Thoracic Society Educational Book Series.[22] In this session, patients were informed about MI, and accordingly, 4 motivational interview sessions were established at appropriate times for patients.

Second Interview (Visit 2 Third month)

It was held in the third month after the first visit. During this visit, the patients recompleted the QTK on COPD and the AFIT, were re-subjected to CAT and MMAS-8, and were then provided with reinforcement training using the above mentioned method.

Third Interview (Visit 3 Sixth month)

It was held in the sixth month after the first visit. This visit included recompletion of the QTK on COPD and the AFIT, reapplication of the CAT and MMAS-8, and the repetition of reinforcement training using the abovementioned method.

Fourth Interview (Visit 4 First year)

It was held in the 12th month after the first visit. This visit included recompletion of the QTK on COPD and the AFIT, reapplication of the CAT and MMAS-8, and the repetition of reinforcement training using the above mentioned method.

In addition, this visit included the determination of the number of moderate/severe COPD exacerbations and mortality rates in the last 1 year.

Motivational Interview

MI were conducted in 4 individual sessions for each patient in the study group after the presentation by the educator nurse on the day of discharge (at baseline) and at the first, third and sixth months after discharge. The 45-minute sessions were conducted by a specialist psychiatric nurse trained in motivational interviewing. The topics of the sessions can be summarized as follows: 'Information and Introduction' (first session), 'Problem Identification and Awareness Raising' (second session), 'Production of the Solution using Equity' (third session), and 'Taking Responsibility' (fourth session).

The main objectives of the first session (baseline) included the introduction of MI and the co-determination of the potential effects of these interviews on the course of the disease.

The main objectives of the second session (first month) were to understand the impact of COPD on the character and quality of life of the patient, to recognize inappropriate coping strategies and ideas, to identify the benefits of disease management, and thus to create a motivation for change.

The aim of the third session (third month) is to enable the patient to perform self-assessment, to support self-efficacy for the management of the disease, and thus to guide the use of available resources.

The main objectives of the fourth session (sixth month) were to emphasize the positive behaviors and self-efficacy of the patients toward healthy living and disease management, to support patient's ability to take responsibility for his/her own health, and to teach the methods of self-evaluation.

Control Group

The patients in the control group did not receive any training or MI, only standard treatment. In the 12th month after discharge, the patients in the control group were invited to the fourth visit by telephone. This visit included the determination of the number of moderate/severe COPD exacerbations and mortality rates in the last 1 year (Table 1).

Statistical Analysis

Data were analyzed using the Statistical Package for the Social Sciences Version 23.0. (IBM SPSS Corp.; Armonk, NY, USA). The descriptive statistics were expressed as frequency distributions, whereas the continuous variables were expressed as arithmetic mean, median, and standard deviation. The chi-square test was used to compare qualitative data, and Fisher's exact test was used when necessary. The Shapiro–Wilk test was used to check the normality of the data. The Mann–Whitney *U*-test was used to compare the groups with non-normal distribution. The Friedman test was used to compare 3 or more values at different measurement times, and the Wilcoxon signed-rank test was used to determine the difference between the 2 values. The repeated measures analysis of variance was used to test the intergroup difference of values at different measurement times. The level of significance was set at $P < .05$.

RESULTS

Study Flow

The study group included 21 patients and the control group included 19 patients. Twelve months after the start of the

Table 1. Scales Applied in Study Design

Materials	Baseline, Visit 1, MS 1	First Month After Discharge, MS 2	Third Month After Discharge, Visit 2, MS 3	Sixth Month After Discharge, Visit 3, MS 4	12th Month After Discharge, Visit 4
Demographic characteristics and registration of related data	S/C	-	-	-	-
Pulmonary function tests	S/C	-	S	S	S/C
COPD Assessment Test (CAT):	S/C	-	S	S	S/C
Assessment form of inhaler technique	S/C	-	S	S	S/C
Questionnaire on theoretical knowledge about COPD:	S/C	-	S	S	S/C
DCPR Survey	S/C	-	-	-	-
Standardized Mini-Mental Test (SMMT):	S/C	-	-	-	-
8-item Morisky Medication Adherence Scale	S/C	-	S	S	S/C
COPD education	S	-	S	S	S/C
Motivational interview	S	S	S	S	-
Standard medical care	S/C	-	S	S	S/C

S, study; C, control; MS, motivational session.

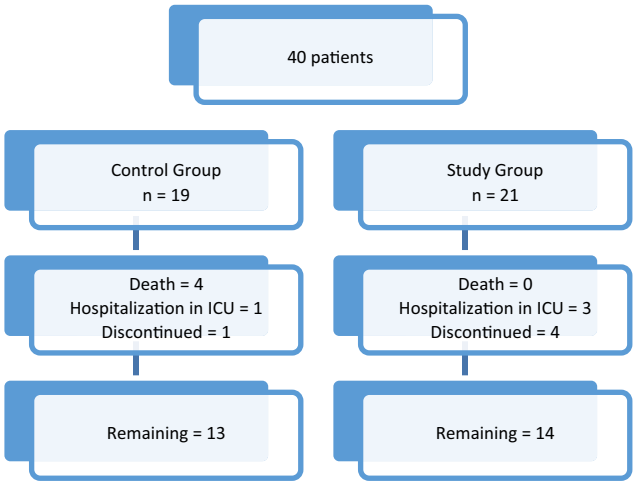


Figure 1. Study flow. *$P < .01$ (compared with first visit)

study, no mortality was observed in the study group. In the control group, the number of mortalities was 4 (flow chart of the study, Figure 1).

Baseline Characteristics

The baseline characteristics of the patients are shown in Table 2. The difference between the groups was not statistically significant. Baseline sMMT score was lower in the study group, indicating a worse mental state (22 vs. 25).

According to the results of the QTK on COPD, 37 (92.5%) of the patients stated that COPD is a pulmonary disease, 38 (95%) stated that smoking is the most important cause for the development of COPD, 36 (90%) stated that COPD may develop due to occupational reasons, 39 (97.5%) stated that COPD was most commonly seen at 40 years of age and later, and 37 (92.5%) stated that the first step in elimination of COPD was to quit smoking.

Baseline DCPR Characteristics

There was no significant difference in baseline DCPR diagnostic criteria between the study and control groups (Table 3). There was no significant difference between the 2 groups in terms of family history of psychiatric disorders. The assessment of the DCPR diagnostic criteria revealed at least one DCPR diagnosis in 92.5% of all patients.

Variation of Parameters Over Time

Comparison of the COPD knowledge levels of patients in both groups at baseline and at 12 months showed an increase in knowledge level over time in the study group, but there was no significant difference in the control group. The change in knowledge level over time in the study group is shown in Figure 2.

The CAT analyses of the participants at baseline and at 12 months are shown in Table 4. The mean scores of the MMAS-8 are shown in Table 5. In the control group, there was no significant difference in terms of mean scores of MMAS-8 scale over time, whereas a significant difference was found in the study group. The competency in the use of the Aerolizer was statistically higher in the study group than in the control group (Table 5).

Table 6 shows the number of moderate/severe COPD exacerbations during the study period. In the control group, 5 (38.5%) patients had >2 COPD exacerbations, while 1 (7.1%) patient in the study group had > 2 COPD exacerbations. However, this difference did not reach statistical significance. During the study period, 4 patients died in the control

Table 2. Baseline Sociodemographic and Clinical Characteristics of the Patients in the Study and Control Groups

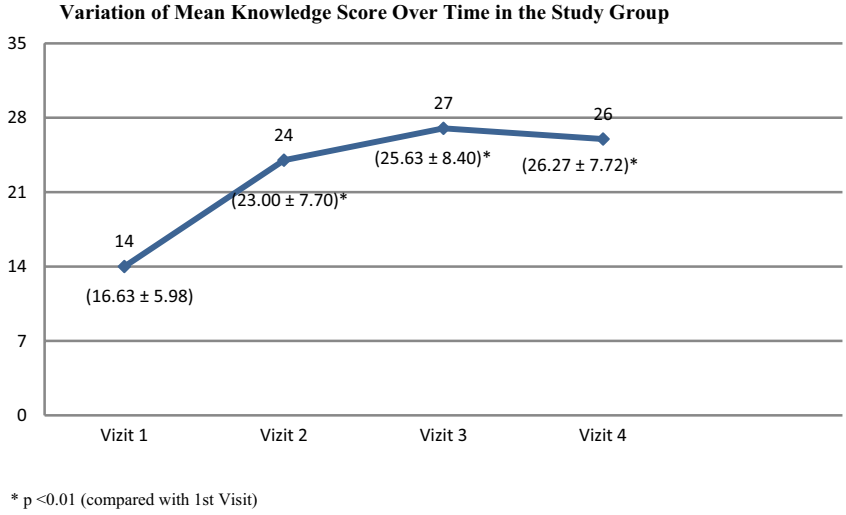
	Control, *n* = 19, Mean + SD (Median)	Study, *n* = 21, Mean + SD (Median)	Total, *n* = 40, Mean + SD (Median)	Z/χ^2	*P*
Age†	68.36 ± 8.40(71.00)	66.42 ± 10.64(68.00)	67.35 ± 9.57(70.50)	−0.448	.654
BMI†	27.65 ± 7.28(25.40)	28.17 ± 8.53(25.34)	27.92 ± 7.86(25.37)	−0.068	.946
Gender**					
Male	16 (84.2)	16 (76.2)	32 (80.0)	0.401	.698
POST_FEV_1†	0.82 ± 0.26(0.84)	0.82 ± 0.35(0.84)	0.82 ± 0.31(0.84)	−0.285	.776
POST_FEV_1/FVC†	50.89 ± 9.78(52.00)	53.28 ± 15.41(45.00)	52.15 ± 12.94(48.50)	−0.081	.935
SaO2†	85.51 ± 11.73(88.50)	84.95 ± 15.04(88.10)	85.22 ± 13.40(88.30)	−0.176	.860
pH†	7.39 ± 0.03(7.40)	7.40 ± 0.04(7.40)	7.40 ± 0.03(7.40)	−0.707	.479
pCO2†	47.53 ± 7.21(46.42)	45.43 ± 8.50(46.10)	46.42 ± 7.89(46.42)	−0.868	.385
pO2†	62.35 ± 14.83(63.52)	64.57 ± 19.12(60.00)	63.52 ± 17.03(63.26)	−0.109	.914
CAT	22.10 ± 5.77(21.00)	19.71 ± 7.44(21.00)	20.85 ± 6.72(21.00)	−0.965	.335
Home O_2 therapy*	12 (63.2)	15 (71.4)	27 (67.5)	0.048	.826
Smoking status**	7 (36.8)	4 (19.0)	11 (27.5)	2.436	.354
SMMSE†	24.07 ± 2.56(25.00)	20.92 ± 2.62(22.00)	22.50 ± 3.00(22.00)	−2.544	.011
MMAS−8†	5.05 ± 1.62(5.00)	5.44 ± 1.82(6.00)	5.25 ± 1.71(6.00)	−0.839	.401

†Mann–Whitney *U*-test; *chi-square test; **Fisher's exact test.
FEV_1, forced expiratory volume in 1 second; FVC, forced vital capacity; SaO_2, oxygen saturation; pCO_2, partial pressure of carbon dioxide; pO_2, partial pressure of oxygen; CAT, COPD assessment test; SMMSE, Standardized Mini-Mental State Examination; MMAS-8, 8-item Morisky Medication Adherence Scale.

Table 3. Baseline DCPR Diagnostic Distributions of Patients in the Study and Control Groups

	Control, *n* = 19, *n* (%)	Study, *n* = 21, *n* (%)	Total, *n* = 40, *n* (%)	χ^2	*P*
Health anxiety*	7 (36.5)	5 (23.8)	12 (30.0)	0.306	.580
Disease phobia**	0 (0)	2 (9.5)	2 (5.0)	1.905	.488
Thanatophobia**	3 (15.8)	0 (0)	3 (7.5)	3.585	.098
Illness denial**	8 (42.1)	11 (52.4)	19 (47.5)	0.111	.739
Secondary somatic symptoms**	1 (5.3)	2 (9.5)	3 (7.5)	0.261	1.000
Persistent somatization	0 (0)	0 (0)	0 (0)	-	-
Conversion symptoms	0 (0)	0 (0)	0 (0)	-	-
Anniversary reaction	0 (0)	0 (0)	0 (0)	-	-
Type A behavior*	10 (52.6)	10 (47.6)	20 (50.0)	0.000	1.000
Irritable mood*	6 (31.6)	9 (42.9)	15 (37.5)	0.167	.683
Demoralization**	4 (21.1)	2 (9.5)	6 (15.0)	1.040	.398
Alexithymia**	3 (15.8)	2 (9.5)	5 (12.5)	0.358	.654
Any DCPR diagnosis	18 (94.7)	19 (90.5)	37 (92.5)	0.261	1.000

*Chi-square test, **Fisher's exact test.
DCPR, diagnostic criteria for psychosomatic research.



* p <0.01 (compared with 1st Visit)

Figure 2. Variation of COPD knowledge level over time in the study group.

group, while no death was observed in the study group. There was a significant difference between the 2 groups in terms of mortality rates (Table 7).

DISCUSSION

Despite many developments over the years, we are still far from the desired point in COPD management. In clinical trials on patients at an advanced stage of the disease, symptoms and exacerbations persist despite all kinds of pharmacological treatments in a large proportion of patients. The progressive and insidious development of the disease, and disability, isolation, and morbidities require a biopsychosocial approach to cope with the disease. In light of this fact, it would be very beneficial to support the treatment with motivational interventions to help patients in the recognition of

Table 4. Comparison of CAT Scores at Baseline and 12th Month

	Control (*n* = 10), Mean ± SD (Median)	Study (*n* = 14), Mean ± SD (Median)	Total (*n* = 24), Mean ± SD (Median)	*F***	*P*
CAT (Baseline)	23.40 ± 2.27(23.00)	19.14 ± 1.92(21.00)	20.91 ± 7.35(21.00)	0.523	.477
CAT (Visit 4)	15.90 ± 2.24(14.50)	14.50 ± 1.89(17.00)	15.08 ± 6.97(16.50)		
Z*	−1.841	−1.540			
P	.066	.123			

*The Wilcoxon test; **The repeated measures ANOVA.

Table 5. Comparison of MMAS-8 Scale Scores at Baseline and 12th Month

	Control, *n* = 10, Mean ± SD (Median)	Study, *n* = 13, Mean ± SD (Median)	Total, *n* = 23, Mean ± SD (Median)	*F***	*P*
MMAS-8 (baseline)	5.20 ± 1.61 (5.00)	5.23 ± 1.87 (6.00)	5.21 ± 1.73 (5.00)	0.953	.340
MMAS-8 (visit 4)	5.70 ± 2.71 (6.00)	6.53 ± 1.61 (7.00)	6.17 ± 2.14 (6.00)		
*Z**/*P*	−1.430/0.153	−1.956/0.050			
Aerolizer use (baseline)	8.00 ± 2.64 (9.00)	8.37 ± 1.92 (9.00)	8.27 ± 2.00 (9.00)	6.765	.029
Aerolizer Use (visit 4)	6.66 ± 3.05 (6.00)	9.50 ± 1.06 (10.00)	8.72 ± 2.10 (10.00)		
*Z**/*P*	−1.342/0.180	−2.060/0.039			

*The Wilcoxon test; **The repeated measures ANOVA.

Table 6. Distribution of the Number of Moderate/Severe Exacerbations During the Study

Number of Exacerbations**	Control, *n* = 13, *n* (%)	Study, *n* = 14, *n* (%)	Total, *n* = 27, *n* (%)	χ^2	*P*
0	3 (23.0)	7 (50.0)	10 (37.0)		
1	5 (38.5)	6 (42.9)	11 (40.7)	4.326	.141
≥ 2	5 (38.5)	1 (7.1)	6 (22.3)		

**Fisher's exact test.

the disease and in the formation of behavioral changes necessary for the therapeutic process.

The COPD-related symptoms, including weakness, reluctance, shortness of breath, sleep and appetite disorders, are also among the symptoms seen in depression and anxiety disorders. Therefore, it is not easy to clearly distinguish the borders of depression and anxiety disorders in COPD patients. Since DCPR is structured on the basis of a group of patients with a medical disease, it provides a more accurate assessment of these patient groups. The use of this tool is one of the unique features of our study. The assessment of the DCPR diagnostic criteria revealed at least one DCPR diagnosis in 92.5% of all patients. The very high rate strikingly shows the significant level of influence on the mental state if patients are subjected to a detailed assessment, which includes evaluation of basic psychiatric disorders as well as abnormal disease behavior, sub-dimensions of somatization, and frequent psychiatric conditions.

Kübler Ross[23] has reported that the mourning process includes stages of denial, anger, bargaining, depression, and acceptance. Individuals mourn after the loss of their health as well as after the death of a relative. The first stage of this mourning period is denial of the disease. In our study, the assessment of the DCPR diagnostic criteria showed that 47.5% of the patients had a diagnosis of illness denial in the sub-dimension of abnormal disease behavior. A study evaluating the stages of mourning in COPD has shown that the illness denial, even if with a higher severity at the time of initial diagnosis, persisted in the later stages of the disease.[24] Studies show the existence of a low or high level of illness denial, regardless of the stage of chronic diseases.[25,26] Symptoms and exacerbations should not be underestimated, and exacerbations should not be attributed to aging or poor physical condition in order to reduce the rate of illness denial in COPD patients. Such behavioral approaches will reduce the rate of illness denial, thus making positive contributions to the therapeutic process.

Table 7. Distribution of Mortality Status During the Study Period

Mortality Status**	Control, *n* = 17, *n* (%)	Study, *n* = 21, *n* (%)	Total, *n* = 38, *n* (%)	χ^2	*P*
No	13 (76.5)	21 (100)	34 (89.5)	5.522	.032
Yes	4 (23.5)	0 (0)	4 (10.5)		

**Fisher's exact test.

Type A behavior pattern (TABP) was also common in both the control and study groups (52.6% and 47.6%, respectively). Type A behavioral patterns often include features such as a feeling of insufficient time, anger, irritability, impatience, reflections of time pressure on the body, and tendency to accelerate mental and physical activities. A study conducted in 2018 showed an increase in the severity of dyspnea and number of exacerbations in parallel with the increase in the scores of TABP in COPD patients.[27] One study reported a higher incidence of smoking in individuals with a higher frequency of TABP.[28] Given that smoking is an important risk factor for the development of COPD, the treatment of type A behavioral pattern may positively affect the reduction in smoking rates. This eliminates one of the most important risk factors for COPD.

Accordingly, the coexistence of one-to-one education with MI to improve treatment compliance provides support for the control of symptoms. However, the illness denial and TABP complicates the cooperation between patients and healthcare personnel. In this study, the topics of MI with patients

with COPD usually consist of smoking cessation, compliance with diet and treatment plan, and the ability to create exercise habits. In general, individual education of patients with COPD improves their self-care, self-efficacy and self-management. Continuity of the training, addressing many issues during training, and increasing the patients' motivation have positive effects on the management of the disease.[29] Bourbeau et al.[30] reported that education on symptom management and psychosocial support in COPD patients had positive effects on knowledge levels, self-efficacy levels, and self-management skills. Our results show that there is an increase in the level of knowledge of the disease and the rates of compliance with treatment in patients under regular follow-up.

Studies on patients with COPD have shown positive effects of education on symptom control and quality of life.[31,32] A systematic review and meta-analysis study by Wang et al.[33] showed that self-care-based education increased the quality of life associated with the disease, and that the effect of education continued until 12 months after education.[33] In a study aimed at establishing exercise habits, a brief motivational interview was conducted over 2 sessions.[29] This practice has been shown to improve quality of life, compliance with medications, and to induce a tendency to exercise. In our study, both study and control groups had a decrease in CAT scores during the follow-up period, with a statistically insignificant difference. However, the comparable rates of drug compliance in both groups after the follow-up period are indicative of the recovery of the usual lifestyle.

Self-management training sessions reduce the rates of admission to the emergency department, hospitalization, and unplanned medical control examinations, especially in patients with advanced COPD.[34] A motivational interview study aimed at increasing the self-management of the disease found a decreased possibility of hospitalization in the study group.[35] In our study, there was no significant difference between the study and control groups in terms of length of hospital stay and the rates of admission to the emergency department. However, there was a significant effect on mortality rates. While 4 people died in the control group, there were no deaths in the intervention group. Increasing self-management skills of patients with COPD has positive effects on both prognosis and the use of early intervention measures by patients.

There are some limitations in our study, including the lower number of patients. This makes it difficult to generalize the study results for the general COPD population in the country. Therefore, it would be useful to conduct a further study with a higher number of samples. The profile of patients varies among hospitals. Therefore, it would be beneficial to carry out the studies in different centers. The sample of our study consisted of patients with severe COPD who were hospitalized due to exacerbation of COPD. The effect of education and motivational interviewing could not be assessed in patients with less severe disease, taking into consideration the social structure and patients' perception levels in MI.

CONCLUSION

In the present study, approximately half of the COPD patients had illness denial and type A personality traits. These 2 psychiatric diagnoses may present a serious problem for the application and continuation of treatment. MI led to an increase in both theoretical knowledge about treatment and rates of compliance in the study group. Significant improvements in these areas may have contributed to the reduction in mortality rates in the study group. The overall evaluation of our results shows that a multidisciplinary approach to the planning and implementation of the treatment of COPD patients will provide significant improvements in morbidity and mortality rates.

Ethics Committee Approval: The study was approved by the ethical committee of Gazi University (Date: July 3, 2015 - number: 80534).

Informed Consent: The written and verbal informed consent were obtained from the COPD patients who agreed to participate in this research.

Peer-review: Externally peer-reviewed.

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