

EFFECTS OF CHRONIC OBSTRUCTIVE PULMONARY DISEASE ON THE FUNCTIONAL STATUS AND QUALITY OF LIFE IN THE GERIATRIC POPULATION

KRONİK OBSTRUKTİF AKCİĞER HASTALIĞININ YAŞLI POPÜLASYONDA FONKSİYONEL DURUM VE YAŞAM KALİTESİNE ETKİSİ

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Özet

Amaç: Bu çalışmanın amacı kronik obstruktif akciğer hastalığının (KOAH) yaşlı hastalarda fonksiyonel durum ve yaşam kalitesine etkilerini değerlendirmektir.

Gereç ve Yöntem: 65 yaş ve üstü 118 hasta çalışmaya dahil edildi. Hastaların demografik bilgileri kaydedildi. Hastaların fonksiyonel durumu fonksiyonel aktivite skoru ile, yaşam kalitesi SF-36 yaşam kalitesi ölçeği ile değerlendirildi.

Bulgular: 118 hastanın 49unda KOAH vardı. KOAHLı hastaların fonksiyonel aktivite skoru istatistiksel olarak anlamlı düşüktü ($p=0,001$). KOAHLı hastaların SF 36 yaşam kalitesi ölçeği alt gruplarından fiziksel fonksiyon, ağrı, canlılık/enerji, ruh hali ve mental sağlık skorlarında istatistiksel olarak anlamlı düşüklük izlenirken, fiziksel rol güçlüğü, genel sağlık ve sosyal fonksiyon skorlarında istatistiksel olarak anlamlı fark izlenmedi.

Sonuç: Bu çalışmadan elde edilen bilgilere göre, KOAH varlığı hastaların fonksiyonelliğini ve yaşam kalitesinin hem fiziksel hem mental komponentini olumsuz etkiler.

Anahtar kelimeler: Kronik Obstruktif Akciğer Hastalığı, yaşam kalitesi, fonksiyonel durum, geriatrik popülasyon.

Abstract

Objective: The objective of this study was to evaluate the effects of Chronic Obstructive Pulmonary Disease (COPD) on the functional status and quality of life in geriatric patients.

Material And Method: One hundred and eighteen patients 65 years old or older were included in the study. Demographic data of the patients were recorded. Functional activity score was used to evaluate the functionality of the patients, while SF 36 quality of life scale was used to evaluate the quality of life.

Results: COPD was present in 49 patients out of 118. The functional activity scores of the patients with COPD was found significantly lower ($p=0,001$). Among the subgroups of SF 36 Quality of Life Scale, physical function, pain, vitality/energy, role of mood and mental health scores were found significantly lower in patients with COPD ($p<0.05$), while no statistical differences were found in physical role difficulties, general perception of health and social function scores.

Conclusion: According to the data obtained from this study, existence of COPD appears as a factor that negatively affects the functionality of patients and both the physical and mental components of quality of life.

Key words: Chronic Obstructive Pulmonary Disease, quality of life, functional status, geriatric population.

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Introduction

Chronic obstructive pulmonary disease (COPD), which is one of the chronic diseases that progresses in the old age, is characterized with progressive and irrevocable restriction in the air flow (1). It is common and associated with an increasing disease burden. It accounts for over 1,000 consultations per 10,000 patients in the 75-and-over age group, compared with 400 in those under 65 years of age (2). In this context, COPD is a disease that worsens the quality of life through its frequency and the functional restriction and inability it causes. Specific daily living activity criteria are evaluated in general when defining these functional incapacities. With the addition of old age, the incapacities in the daily living activities (DLA) emotional, cognitive and physical activity changes and social restrictions caused by the disease increase the dependence of the individual even more (3). In this study, it was aimed at determining the effects of COPD on the level of dependency in DLA, that is, the functional restrictions and quality of life.

Materials and Method

Stable patients older than 65 years of age with cognitive functions adequate for communication (with Mini Mental Test Scores >20), diagnosed with COPD according to the GOLD (global initiative for chronic obstructive pulmonary disease) classification and who were able to answer the items in the questionnaire were included in the study. Approval of the ethical committee of the hospital for the study was obtained.

Demographic data of the patients including the age, gender, status of actively working, educational level, co-existing chronic disease and smoking were recorded. Functional activity score was used to evaluate the functionality of the patients, while SF 36 quality of life scale was used to evaluate the quality of life.

Functional activity score was obtained by summing the scores given for cleaning, shopping, transport, preparing meals, washing, dressing, toilet, transfer, continence and similar functions. Three points were given for independence in each function, 2 points were given for partial dependency, and 1 point was given for dependency (4).

SF-6, which was used to evaluate the quality of life, is an evaluation tool that was developed by Ware in 1987, and the studies regarding validity in Turkey was carried out by Koçyiğit and colleagues in 1999 (5). As seen in the name, the scale consists of 36 items that provide for the measurement of 8 dimensions: physical function (PF) (10 items), social function (SF) (2 items), physical role difficulties (PRD) (4 items), mental status role (MSR) (3 items), mental health (MH) (5 items), energy/vitality (4 items), pain (4 items) and general perception of health 27 (GH) (5 items) (6). The subscales are evaluated between 0 and 100, and while 0 indicates the worst health condition, 100 indicates a good health condition. As

a result, it is possible to obtain separate scores for each subscale. SF-36 evaluates the positive aspects of the health condition as well as the negative ones. Scores of subscales range between 0 and 100. Higher scores indicate better health condition. No total score is calculated for the scale. Sum of the scores in each of the 8 components are evaluated separately for physical health (PH) and mental health (MH). It has been shown that SF-36 is successful and useful in the evaluation of quality of life in COPD (7,8).

Statistical Analysis

The SPSS-15.0 package program was used for the analyses. Descriptive analyses were used in the analyses. Chi-square or Fisher's Exact Chi-square test was used to compare the categorical data for the patients with and without COPD including gender and the independent samples t-test was used for the comparison of continuous variables. $P < 0.05$ was accepted as the statistical significance level.

Results

Sixty-eight patients out of 118 patients included in the study were females (57.6%), and 50 (42.4%) were males. The mean age of the patients was 71.18 ± 6.62 years. While 49 patients had COPD (42.5%), 69 did not have COPD. The mean age of the patients with COPD was 75.87 ± 7.21 and the mean age of the patients without COPD was 67.85 ± 3.40 . This difference was statistically significant ($p = 0.00$).

The demographic characteristics of geriatric patients with and without chronic obstructive pulmonary disease are given in the related table (Table 1). Accordingly, no differences were found between the geriatric patients with and without COPD as regards distribution according to gender ($p = 0.398$).

When working statuses were compared, there were no differences in the status of working actively between geriatric patients with and without COPD ($p = 0.365$).

Table 1 | Demographic characteristics of the patients with and without COPD.

	With COPD (n=49)	Without COPD (n=69)	p
Sex			
Female n(%)	26 (53.1)	42 (60.9)	0.398
Male n(%)	23 (46.9)	27 (39.1)	
Working status			
Actively working n(%)	25 (37.9)	41 (62.1)	0.365
Non actively working n(%)	24 (46.2)	28 (53.8)	
Educational status			
Illiterate n(%)	26 (53.1)	13 (18.8)	0.000
Literate n(%)	23 (46.9)	56 (81.2)	
Co-morbidities			
None n(%)	0 (0)	4 (5.8)	
1 co-morbidity n(%)	36 (73.6)	54 (78.3)	
More than 1 co-morbidity n(%)	13 (26.5)	11 (15.9)	
Smoking			
Yes	11 (22.4)	11 (15.9)	0.371
No	38 (77.6)	58 (84.1)	

When educational statuses were compared, it was seen that 26 (53.1%) of the geriatric patients with COPD were illiterate and 23 (46.9%) were literate, while 13 (18.8%) of the geriatric patients without COPD were illiterate and 56 (81.2%) were literate. This difference was statistically significant ($p=0.00$).

To compare the patients with and without chronic obstructive pulmonary disease as regards co-existing chronic diseases, since there were only 4 patients without co-existing chronic diseases in the group without COPD, analyses were performed after excluding these 4 patients from the analysis. When patients with and without COPD were compared as regards the existence single or multiple chronic diseases, it was seen that 36 (73.5%) of the patients with COPD had a co-existing chronic disease, while 13 (26.5%) had multiple chronic diseases. Among the patients without COPD, 54 (83.1%) had a co-existing chronic disease, while 11 (16.9%) had multiple chronic diseases. This difference was not statistically significant ($p=0.213$).

Upon comparison of smoking, 11 (22.4%) of the patients with COPD smoked, while 38 (77.6%) did not. Of the patients without COPD, 11 (15.9%) smoked, while 58 (84.1%) did not. This difference was not statistically significant ($p=0.371$).

Functional activity score was found significantly lower in patients with COPD ($p=0.000$) (Table 2). Among the subgroups of the SF-36 quality of life scale, the scores in physical function, pain, vitality/energy, roles of mood, mental health and physical health were found significantly lower in patients with COPD ($P<0.05$), while no statistically significant differences were found in physical role difficulties, general perception of health and social function scores (Table 2).

Significant positive correlation was found between the functional activity score and physical function, pain, vitality/energy, emotional role and mental health scores. No correlation was found between the functional activity score and physical role difficulties, general perception of health and social function scores (Table 3).

Discussion

Chronic obstructive pulmonary disease is a complex disease that can be seen in any age group, and evaluation of all aspects is recommended. In addition to the increase in the prevalence of COPD with the advancing age, functional performance of the patients reduces with the addition of disabilities related to age to the COPD symptoms, and quality of life is impaired even more. In our study there was a statistically significant difference in the mean age of patients with and without COPD. The higher mean age of the patients with

Table 2 | Comparison of the functional activity scores and SF-36 parameters in patients with and without COPD.

	Patients with COPD (n=49)	Patients without COPD (n=69)	P
Functional activity score	24.91±5.00	29.14±1.65	0.001*
Dressing	2.46±0.71	2.95±0.20	0.001*
Transport	2.04±0.78	2.66±0.50	0.001*
Shopping	2.04±0.78	2.68±0.49	0.001*
Cleaning	2.16±0.74	2.76±0.45	0.001*
Preparing meals	2.46±0.54	2.94±0.23	0.001*
Bathing	2.59±0.64	2.98±0.12	0.001*
Toilet	2.79±0.40	3.00±0.00	0.001*
Continence	2.77±0.51	3.00±0.00	0.001*
Transfer	2.79±0.40	3.00±0.00	0.001*
Eating	2.83±0.37	3.00±0.00	0.001*
Quality of Life			
Physical function	27.64±7.25	38.00±8.92	0.001*
Physical role difficulties	39.80±11.69	41.86±7.86	0.254
Pain	39.37±9.64	44.91±8.90	0.002*
General health	32.19±5.33	33.88±6.57	0.139
Vitality	35.44±6.45	40.20±8.43	0.001*
Social function	42.45±6.84	44.97±7.58	0.066
Role of mood	41.11±9.32	48.13±7.71	0.001*
Mental health	37.87±4.99	40.99±3.69	0.001*
Physical score	35.61±8.67	41.36±8.89	0.001*
Mental score	42.27±6.64	48.26±4.21	0.001*

COPD as compared to those without COPD can be related to the increase of COPD prevalence with the advancing age. On the other hand, this has contributed to the poorer quality of life in patients with COPD, since age is a factor that impairs the quality of life by itself. The age difference between the two groups is a limitation of our study.

COPD is more frequently seen in males since smoking is more common in males and they are exposed to dust and particles to a greater extent with occupational reasons (9). In our study, there was no difference the distribution of gender in geriatric patients with and without COPD. We thought that this could be related to the smoking habit becoming more common among women in the developing countries like ours and to the diminishing of occupational differences among men and women.

We attributed the lack of difference between the statuses of working actively in the two groups although chronic obstructive pulmonary disease directly affects the status of working of the individuals to the fact that the selection of the patients was not proportional with the stages of COPD.

Chronic obstructive pulmonary disease is a disease that patient training and compliance with the treatment is impor-

Table 3 | Correlation of the functional activity score with the subgroups of the SF-36 quality of life scale.

	FF	FRGP	PAIN	GS	V/E	SF	RDR	MS	FS	MS
r	0.635*	-0.157	0.289*	0.084	0.187*	0.077	0.384*	0.574*	0.377*	0.567*
p	0.000	0.091	0.002	0.369	0.43	0.409	0.000	0.000	0.000	0.000

* Significant

tant in the treatment. In the study of Gallefoss and colleagues, the number of applications to the doctor was reduced by 73% through the treatment of patients and the quality of life of the trained patients was found to be better (10). Being illiterate, which is very important in the training of patients with COPD, causes the reducing of compliance with treatment, and consequently, inability to treat the disease and reducing of the quality of life. In this case, the contribution of the lower educational levels of patients was added to the reducing in the quality of life of the patients.

Co-morbidity is among the important factors affecting the quality of life. Co-morbidities were found to be more important when determining the quality of life in COPD as compared to the symptoms, demographic characteristics or clinical variables. Particularly, existence of three or more co-morbidities causes deterioration of the quality of life (11). Lack of difference between the geriatric patients with and without COPD as regards the existence of one or more co-morbidities had caused us to eliminate the effects of co-morbidities when explaining the differences in the quality of life.

It is thought the quitting smoking affects the quality of life positively (11). In our study, lack of difference between patients with and without COPD as regards smoking had caused the elimination of the effects of smoking on quality of life.

The contents of functional performance include activities related to the bodily needs of the individual like dressing, eating or washing; contents of mental health includes listening to music, reading, gardening and hobbies; and the contents of the social component includes interactions with the society and family like throwing parties or organizing meetings, visits to friends or chatting on the phone. Spiritual components include spiritual emotions, praying and meditation, attending religious meetings or participating in volunteering works. Thus, functional performance includes the physical activities that make compliance to maintain and improve the optimal health easier (12). Kaya and colleagues found that 9.2% COPD patients over 65 years of age were fully dependent in washing and 28.9% were partially dependent; while 34.2% were fully dependent in shopping and 13.2% were partially dependent (13). In another retrospective study investigating the dependence levels of patients with COPD in performing their DLAs, it was shown that 60% of the patients were dependent on another individual for the personal care, 84% in housework, and 55% were dependent in medical care (14). In our study also, we found that geriatric patients with COPD had lower scores in all the functional activity scores including dressing, transport, shopping, cleaning, preparing meals, washing, toilet, continence, transfer and eating as compared to the patients without COPD. The reason for this is the expected result of shortness of breath on the reducing of the effort capacity and restriction in physical activities.

The quality of life reflects the difference between the wished and current ways of living. Improvement of quality

of life in COPD is more important as compared to increasing the length of life. Determining the quality of life in a realistic and sensitive way can be ensured by using quality of life questionnaires that are specific to the disease (15,16). It has been concluded in many studies that SF-36 is a valid questionnaire to evaluate the quality of life in patients with COPD and the physical components (physical role and physical function) of SF-36 are sensitive to the changes in quality of life in COPD (17). In our study, we found that the physical function score in geriatric patients with COPD were markedly lower as compared to those without COPD, while we found no difference as regards the difficulties in physical role. The items related to the measurement of the physical function concern effort, and it is questioned whether or not the patients are restricted on different levels of effort. The physical role difficulty score, however, questions whether or not there are any restrictions in work and other daily activities as a result of deterioration of the physical health. We think that the difference between these scores originates from the fact that COPD restricts the physical activities of the patients while the works and daily activities are not affected as a result of the chronic nature of the disease and the compensation mechanisms developed by the patients in time. In their study on 321 stable patients with COPD, Salvany et al. showed that the physical function score of SF-36 was specific for the disease and significantly related with the general mortality rate (18). Soyyiğit et al. also found that the physical function and energy components of patients with severe COPD were significantly lower as compared to patients with medium-level COPD (7). We also found the vitality/energy score in geriatric patients with COPD as compared to those without COPD, because the amount of energy allocated to daily living activities is reduced in patients with COPD since the amount of energy spent for respiration increases.

The lower pain scores found in geriatric patients with COPD although chronic obstructive pulmonary disease does not cause pain can be related to the accompanying pain in the musculoskeletal system, since the mean age of this group is higher.

The items evaluating the general health condition and social function question the degree of affects of the physical health status of the patients on the social activities within the family, neighborhood and friendship relationships. Soyyiğit et al. found the general perception of health and the social function component significantly lower in patients with severe COPD as compared to the patients with medium-level COPD (7). In our study however, we did not find any differences between the general perception of health and the social function component or any significant correlation between these and the functional activity score. However, depression and restriction of the physical activity in patients with COPD deteriorates the social well-being status of the individual, and the social component scores are found lower (19). We thought that the lack of difference was related to

the grouping of the COPD patients according to the stages and selection of patients in earlier stages, while it is known that the general health perception and social functions deteriorate with the worsening COPD stage. Together with this, the devices including oxygen cylinders and home-type nebulizers used at homes of patients with medium/severe COPD decrease the dependence of patients to the hospital, even with a small degree, and allow socialization. Dyspnea, which is the main symptom in the chronic obstructive pulmonary disease, lowers the mental health scores since it causes emotional stress. In our study also, the mental status role and mental health scores in geriatric patients with COPD were found to be lower as compared to those without COPD. In addition, significant positive correlation was found between the functional activity score and the mood and mental health component. Exacerbation in emotional problems, nervousness and depressive mood with the increasing dependency in daily activities is an expected result. To the contrary, Stahl et al. found significant correlation between the physical function score of SF-36 and the severity of COPD, while they found that the mental health component was not related to the severity of COPD (20).

Positive significant correlation between the functional activity score and the physical function, pain, vitality/energy, emotional role and mental health scores of the SF-36 quality of life scale is an expected result.

In conclusion, we showed in this study that functionality of the geriatric patients with COPD decreased and their quality of life was affected adversely in both physical and mental components as compared to patients without COPD. Determining the dependency of these patients in their DLA and providing them with the required support will be effective in ensuring them to lead a self-sufficient life, because improving the quality of life in COPD is much more important than increasing the length of life. This will require health policies that support this way of understanding and implemented by well-trained professionals.

Kaynaklar

1. Pauwels RA. National and interventional guidelines for COPD. The need for evidence. *Chest* 2000;117: 20-2
2. Ruse CE, Molyneux AW. A study of the management of COPD according to established guidelines and the implications for older patients. *Age Ageing* 2005;34:299-301
3. Whittle H, Goldenberg D. Functional health status and instrumental activities of daily living performance in noninstitutionalized elderly people. *JAN* 1996; 23:220-227.
4. Aslan Ş, Gökçe-Kutsal Y. Yaşlılarda özür lülüğün değerlendirimine yönelik çok merkezli epidemiyolojik çalışma. *Geriatrici* 1999; 2:103-14.
5. Koçyiğit H, Aydemir Ö, Fiflek G, Ölmez N, Memiş A. Kısa form 36 (KF 36)'nın Türkçe versiyonunun güvenilirliği ve geçerliliği. *İlaç ve Tedavi Dergisi* 1995;12:102-106.
6. Ware JE, Sherbourne CD. The MOS 36-item Short- Form Health Survey (SF- 36). I. Conceptual framework and item selection. *Med Care* 1992;30: 473-483.
7. Soyyiğit Ş, Erk M, Güler N, Kılınc G. Kronik Obstruktif Akciğer Hastalığında Yaşam Kalitesinin Belirlenmesinde SF-36 Sağlık Taramasının Yeri. *Tüberküloz ve Toraks Dergisi* 2006; 54:259-66.
8. Ferrer M, Alonso J, Morera J, et al. Chronic obstructive pulmonary disease stage and health- related quality of life. The Quality of Life of Chronic Obstructive Pulmonary Disease Study Group. *Ann Intern Med*. 1997;127:1072-9.
9. Mannino DM. Chronic obstructive pulmonary disease: definition and epidemiology. *Respir Care* 2003;48:1185-91
10. Gallefoss F, Bakke PS. Impact of patient education and self-management on morbidity in asthmatics and patients with obstructive pulmonary disease. *Respir Med* 2000; 94: 279-87.
11. Van Manen JG, Bindels PJE, Dekker FW, et al. Added value of co-morbidity in predicting health-related quality of life in COPD patients. *Respir Med* 2001; 95: 496-504.
12. Leidy NK. Psychometric properties of the Functional Performance Inventory in patients with chronic obstructive pulmonary disease. *Nurs Res* 1999;48:20-8.
13. Kaya E, Özbek S, Tekin A, Ergin S, Yaman A. KOAH'lı Yaşlı Hastalarda Günlük Yaşam Aktivitelerinin Değerlendirilmesi. *Turkish Journal of Geriatrici* 2010; 13:111-16
14. Elkington H, White P, Addington-Hall J, Higgs R, Edmonds P. The health-care needs of COPD patients in the last year of life. *Palliative medicine* 2005; 19: 485-91.
15. Atasever A, Erdinç E. KOAH'da Yaşam Kalitesinin Değerlendirilmesi. *Tüberküloz ve Toraks Dergisi* 2003; 51: 446-55.
16. Larson JL, Leidy NK. Chronic obstructive pulmonary disease: Strategies to improve functional status. *Annual Review of Nursing Research* 1998;16: 253-87.
17. Mahler DA, Mackowiak JI. Evaluation of the short form 36- item questionnaire to measure health- related quality of life in patients with COPD. *Chest* 1995;107:1585-9.
18. Salvany DA, Lamarca R, Ferrer M, et al. Health- related Quality of Life and Mortality in Male Patients with Chronic Obstructive Pulmonary Disease. *Am J Respir Crit Care Med* 2002;166: 680-85.
19. Siafakas NM, Schiza S, Xirouaki N, Bouras D. Is dyspnea the main determinant of quality of life in the failing lung? A review. *Eur Respir Rev* 1997; 7: 53-6.
20. Stahl E, Lindberg A, Jansson S, et al. Health – related quality of life related to COPD disease severity. *Health and Quality of Life Outcomes* 2005;3:56.