



The relationship between coping strategies and quality of life of patients with lung cancer

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Abstract

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Objective: In this study, it is aimed to examine the coping strategies and quality of life of patients with lung cancer. In this context, the relationship between strategies for coping with lung cancer and the quality of life of patients is discussed. The effect of treatment duration on coping strategies and quality of life is also being examined.

Method: The cross-sectional survey study and the convenience sampling method were used in the study. The World Health Organization Quality of Life- BREF (WHOQOL-Bref; 27 items) and Coping Orientation to Problems Experienced Inventory (Brief-COPE; 28 items) were used as scales. The data of this research were obtained from 201 patients diagnosed with lung cancer and undergoing treatment.

Results: Research results show that 53.0% of the participants were women and 86.1% were married. In addition, the mean age of the participants was 57.19±7.01 (mean ± s. Deviation). A positive correlation emerged between each domain of the WHOQOL-BREF scale. As for the coping scale, it was determined that there were positive and weak relationships between problem-focused coping strategies and quality of life in active coping, planning and positive refraining strategies. It was determined that there was a positive and weak relationship between positive emotion-focused coping strategies and quality of life in all coping strategies. Finally, it was determined that negative emotion-focused coping strategies such as ventilation, behavioral disengagement, denial, and self-blame were affecting the patient's quality of life negatively.

Conclusion: In conclusion, lung cancer patients who used both problem-focused and positive emotion-oriented coping strategies achieved a higher quality of life. On the other hand, it is an important conclusion to consider that negative emotion focused coping strategies negatively affect patients' quality of life. Finally, it can be expressed as another conclusion of this study that age, income and duration of treatment affect both the quality of life and coping strategies of lung cancer patients.

Keywords: Quality of Life, Coping Strategies, Lung Cancer, Duration of Treatment

Öz

Akciğer kanseri olan hastaların baş etme stratejileri ile yaşam kalitesi arasındaki ilişki

Amaç: Bu çalışmada, akciğer kanseri olan hastaların baş etme stratejilerinin ve yaşam kalitesinin incelenmesi amaçlanmıştır. Bu bağlamda, akciğer kanseri hastalarının baş etme stratejileri ile yaşam kalitesi arasındaki ilişki incelenmiş, ayrıca tedavi süresinin baş etme stratejileri ve yaşam kalitesi üzerine etkisi ele alınmıştır.

Yöntem: Bu araştırma, kolayda örnekleme dayalı, kesitsel tipte bir anket araştırmasıdır. Araştırmada Yaşam Kalitesi Ölçeği- Kısa Formu (WHOQOL-Bref) (27 madde) ve Başa Çıkma Tutumlarını Değerlendirme Ölçeği (Brief COPE) (28 madde) ölçek olarak kullanılmıştır. Bu araştırmanın verileri, akciğer kanseri tanısı konmuş ve tedavi süreci devam eden 201 hastalardan elde edilmiştir.

Bulgular: Araştırma sonuçları, katılımcıların %53'ünün kadın ve %86,1'inin evli olduğunu göstermektedir. Ayrıca katılımcıların yaş ortalaması 57.19±7.01 (ortalama ± s. Sapma) olarak tespit edilmiştir. WHOQOL-BREF ölçeğinin bütün alt boyutları arasında pozitif bir korelasyon ortaya çıkmıştır. Başa çıkma ölçeğine yönelik ise problem odaklı başa çıkma stratejileri ile yaşam kalitesi arasında aktif başa çıkma, planlama ve olumlu yeniden yorumlama stratejilerinde olumlu yönde ve zayıf ilişkiler olduğu tespit edilmiştir. Pozitif duygu odaklı başa çıkma stratejileri ile yaşam kalitesi arasındaki bütün başa çıkma stratejisinde olumlu yönde ve zayıf bir ilişki olduğu tespit edilmiştir. Son olarak ise negatif duygu odaklı başa çıkma stratejileri ile yaşam kalitesi arasında ventilasyon, davranışsal olarak geri çekilme, inkâr ve kendini suçlama gibi olumsuz duygu odaklı başa çıkma stratejilerinin hastanın yaşam kalitesini olumsuz yönde etkilediği tespit edilmiştir.

Sonuç: Sonuç olarak hem problem odaklı hem de pozitif duygu odaklı başa çıkma stratejileri kullanan akciğer kanseri hastalarının yaşam kalitelerinin daha yüksek olduğu sonucuna ulaşılmıştır. Öte yandan negatif duygu odaklı başa çıkma stratejilerinin hastaların yaşam kalitelerini olumsuz yönde etkilediğinin dikkate alınması önemli bir sonuç olarak göze çarpmaktadır. Son olarak, yaş, gelir ve tedavi süresi, akciğer kanseri hastalarının hem yaşam kalitesini hem de başa çıkma stratejilerini etkilediği bu çalışmanın bir diğer sonucu olarak ifade edilebilir.

Anahtar Kelimeler: Yaşam Kalitesi, Baş Etme Stratejileri, Akciğer Kanseri, Tedavi Süresi

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INTRODUCTION

Cancer is one of the most prevalent diseases in contemporary societies. World Health Organization (WHO) defines cancer as the uncontrolled growth and spread of cells, which can be seen almost anywhere in the body. The growth of cells usually spreads over neighboring tissue and can metastasize to further spots. Many types of cancer can be prevented by avoiding prevalent risk factors such as tobacco smoke. Furthermore, early diagnosis enables a considerable number of cancer types to be cured by surgery, radiotherapy, or chemotherapy (1).

Cancer is among the primary causes of morbidity and mortality worldwide. It was reported approximately 18 million new cancer cases and 9.5 million cancer-related deaths in 2018. Lung cancer, which is a type of malignant cancer, is counted among the top five prevalent types of cancer (2). In Turkey, there were an estimated 210.537 new cases of cancer per 100,000 adults in 2018, and an estimated about 140,000 new cases in total (3). Although the five-year survival rate approaches 44% for lung cancers detected and treated at an early stage, only 17% are detected early and the overall five-year survival rate for all lung cancers is only 16% (4).

Cancer is an illness that brings challenges at every stage and psychosocial factors are effective in the treatment (5). As a common type of cancer, lung cancer leads to major changes and has devastating effects on people's lives, in both the physical and psychosocial aspects. Lung cancer patients are usually afflicted with numerous symptoms at the same time (6,7). The pain and discomfort caused by the symptoms of lung cancer are reported to be the severest in comparison with other types of cancer (8). People with lung cancer have also problems with fatigue, distress and sadness. It creates emotional side effects, increases depression, and decreases patients' quality of life (9,10).

Patients with lung cancer may face a variety of psychosocial difficulties, particularly high levels of stress. Inability to successfully cope with cancer diagnosis and treatment can lead to significant psychosocial distress (11). The coping process can be defined as a set of specific skills that people use to handle distressing life events. Lazarus and Folkman (12) describe three aspects of coping with stressors: Problem-oriented coping strategies, positive emotion-oriented coping strategies and negative (non-effective) oriented coping strategies. The problem-oriented coping strategies involve doing constructive and effective things such as actively confronting the problem, avoiding competitive activities. The positive emotion-oriented coping strategies are based on the regulation of emotional reactions to stressful situations; they involve seeking emotion-based social support, positive reinterpretation, acceptance and humor. On the other hand,

the negative emotion-oriented coping strategies are not effectively involved with the issue. Denial, lack of behavioral involvement in the problem, focusing on emotion, using drugs and alcohol can be defined as such strategies (13).

In this study, it is aimed to examine the coping strategies and quality of life of patients with lung cancer. In this context, the relationship between the coping strategies and quality of life of lung cancer patients was examined, and the effect of treatment duration on coping strategies and quality of life was discussed.

METHOD

The present study is a survey research with a cross-sectional design, based on convenience sampling. Cross-sectional design allows different population groups to be studied and compared at a specific point in time.

Participants and Procedures

The data was obtained from the patients diagnosed with lung cancer who receive treatment from Ankara University School of Medicine Department of Radiology and accommodation services from Ankara Metropolitan Municipality Şefkat Residential Homes of Oncology (n=201). Data collection process was conducted in Ankara, Turkey. Through face-to-face interviews. Volunteers from patients who met the inclusion criteria were asked to sign informed consent forms before the interview.

Instruments

An interview form and two scales were used in this study. The interview form (9 items) consists of two sections having questions about socio-demographic variables and questions about duration of treatment and social support systems respectively. Quality of life (WHOQOL-Bref; 27 items) and Coping strategies (Brief COPE; 28 items) were used as scales in this study.

The World Health Organization Quality of Life (WHOQOL) Scale - BREF

WHO has started a comprehensive project for assessing the quality of life in a valid and reliable manner in order to obtain accurate results in the international context and accordingly formed many assessment instruments, including WHOQOL-100, WHOQOL-BREF, WHOQOL-OLD (14). In this sense, the short form of the World Health Organization Quality of Life Scale defines the quality of life as "individuals' perceptions of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards, and concerns" (15). The scale that consists of 26 items and a rating system of five includes statements ranging from "1=Very Dissatisfied" to "5=Very Satisfied". The four domains that constitute the scale are 1) physical health involving pain and discomfort,

sleep and rest, energy and fatigue; 2) psychological health involving positive feelings, self-esteem, and bodily image; 3) social relationships involving social support and personal relationships and 4) environmental health involving financial status, transport, secure environment, and health care. High scores are indicative of high quality of life. Turkish adaptation of the scale was carried out by Eser et al. (16).

Coping Orientation to Problems Experienced Inventory (Brief COPE)

The Coping Strategies –Brief COPE Scale was used in order to assess the coping methods and processes of the persons diagnosed with lung cancer. The COPE Inventory form is developed as a survey with 15 domains. Each COPE domain includes four questions and consists of 60 questions in total (17). Later on, Brief COPE with 28 questions was developed as a result of another study. This scale covers 14 domains. These are problem-focused strategies such as active coping, use of emotional support, use of instrumental support, positive reframing, planning, acceptance, religion, and emotion-focused strategies such as self-distraction, denial, substance use, behavioral disengagement, venting, humor, and self-blame. Each domain includes two questions. This new brief form that was developed to assess coping with stress was named Brief COPE (18). Each question in the Likert scale has four response options (“1=I have not been doing this at all” to “4=I have been doing this a lot”). The inventory’s validity and reliability for Turkish society were studied by Tuna (19).

Statistical Analyses

SPSS 23 was used for the data analysis and the study has a confidence level of 95%. The results of Shapiro-Wilk test for normality showed a result below .05 for each sub-scale. Therefore, non-parametric tests were used. In order to evaluate the correlation between sub-scales of WHOQOL-BREF-TR and sub-scales of Brief COPE scale, Spearman’s correlation was used. The correlation between the sub-scales of WHOQOL-BREF-TR’s was also examined. Furthermore, Mann-Whitney U test and Kruskal-Wallis H test were used in order to compare scale results with regard to socio-demographic variables.

RESULTS

Descriptive Statistics

Socio-demographic variables of participants are presented in Table 1. 53.0% of the participants were females and 86.1% of the participants were married. Table 1 also shows that 3.5% of the participants are literate; 14.9% are primary school graduates; 34.8% are secondary school graduates; 44.3% are graduates of high school and equivalent; 2.5% of the participants have a bachelor’s degree (Table 1).

The age groups of the study group were ranged from young adult to elderly. According to Table 1, only 2.5% of the individuals are under the age of 45, 87% of the individuals are between the age of 45 and 64, and 10.4% of them are 65 years old and over. The average age was 57.19 ± 7.01 , while median and mode were 58. The youngest of the participants is 23 and the oldest is 72 years old.

According to data showed in Table 1, 38.3% of the participants had an income of 1603 Turkish Lira, which is the minimum wage in Turkey during the data collection period, or less. Moreover, 27.4% of the participants had income between 1604 and 2000 TL, 15.4% between 2001 and 2400 TL and only 18.9% have income of more than 2401 TL. The average income was 1915.67 ± 591.11 TL. The median was 1800 TL and the mode is 2000 TL. The minimum income was 800 TL while the maximum was 3600 TL (Table 2).

According to Table 2, 21.9% of the participants were taking treatment for less than one year, 38.3% of them were taking treatment for one to two years, and 23.9% of them for two to three years. Lastly, 15.9% of the participants are taking treatment for more than three years. When we look at the data on social support, it was clearly seen that social support from relatives during treatment was reported by most of the participants (92.5%). One-third of participants (35.3%) reported that they had social support from friends and only 8% of them had social support from their neighbors.

Comparative Statistics

In Table 3, it can be seen that there was a positive correlation between each domain of WHOQOL-BREF. There was a positively strong correlation ($p < .01$) between physical health domain and psychological domain ($r = .775$). Social relationship domain was positively moderately correlated with psychological domain ($r = .417$; $p < .01$). Moreover, social relationship domain was positively moderately correlated with physical health domain ($r = .462$; $p < .01$) and environment domain ($r = .336$; $p < .01$). There was also a moderately positive correlation of environment domain with physical health domain ($r = .466$; $p < .01$) and psychological domain ($r = .496$; $p < .01$). In general, it was seen that all sub-scales of WHOQOL-BREF were positively correlated with each other (Table 3).

Considering the correlation between problem-focused coping strategies and quality of life, there seemed some positively weak correlations in Table 4. There was a positive weak correlation between active coping and psychological domain ($r = .146$; $p < .05$), between planning and psychological domain ($r = .148$; $p < .05$). Moreover, there was a positively weak correlation between “positive reframing” and physical health domain ($r = .212$; $p < .01$), environment domain ($r = .144$; $p < .05$) (Table 4).

Table 1. Socio-Demographic Variables (n=201)

	n	%
Sex		
Male	95	47.3
Female	106	52.7
Age		
44 and below	5	2.5
45-54	63	31.3
55-64	112	55.7
65 and above	21	10.4
Mean ±Sd	57.19±7.01	
Median Age	58	
Mode	58	
Lowest – Highest Ages	23-72	
Education		
Literate	7	3.5
Primary School Graduate	30	14.9
Secondary School Graduate	70	34.8
High School Graduate or equivalent	89	44.3
Bachelor's Degree	5	2.5
Marital Status		
Single/Spouse passed away	28	13.9
Married	173	86.1
Income		
1603 TL and below	77	38.3
1604-2000 TL	55	27.4
2001-2400 TL	31	15.4
2401 and above	38	18.9
Mean ±SD	1915.67±591.11	
Median	1800	
Mode	2000	
Lowest – Highest Income	800-3600	

Positive emotion-oriented coping strategies also had a critical role in supporting lung cancer patients' quality of life according to Table 6. It can be seen that there was a positively weak or moderate correlation of positive emotion-focused coping strategies with each quality-of-life sub-scales. Self-destruction, which refers to focusing more explicitly on doing things to take one's mind off the stressor, was positively moderately correlated with physical health domain ($r = .300$; $p < .01$), psychological domain ($r = .300$; $p < .01$), social relationship domain ($r = .329$; $p < .01$), environment domain ($r = .346$; $p < .01$). Humor, which means making fun of the stressor, was positively moderately correlated with physical health domain ($r = .401$; $p < .01$), psychological domain ($r = .383$; $p < .01$), environment domain ($r = .307$; $p < .01$), and

Table 2. Variables regarding treatment duration and social support n= (201)

	n	%
Duration of treatment		
Less than 1 year	44	21.9
1-2 years	76	38.3
2-3 years	48	23.9
More than 3 years	33	15.9
Social support from relatives during treatment		
Yes	186	92.5
No	15	7.5
Social support from friends during treatment		
Yes	71	35.3
No	130	64.7
Social support from neighbors during treatment		
Yes	16	8.0
No	185	92.0

Table 3. Spearman's correlation between the sub-scales of WHOQOL-BREF

	Physical health	Psychological	Social relationship	Environment
Physical health	-			
Psychological	.650**	-		
Social relationship	.462**	.417**	-	
Environment	.466**	.496**	.336**	-

** $p < .01$, * $p < .05$

positively weekly correlated with social relationship domain ($r = .270$; $p < .01$).

Table 4 also shows that negative emotion-oriented coping strategies as venting, behavioral disengagement, denial, and self-blame were affecting the patient's quality of life negatively. Venting, which refers to the tendency to focus on whatever distress or upset one was experiencing had negative week correlation with physical health domain ($r = .223$; $p < .01$), psychological domain ($r = .221$; $p < .01$), social relationship domain ($r = .159$; $p < .05$), environment domain ($r = .206$; $p < .01$). Behavioral disengagement which includes reducing one's effort to deal with the stressor, had negative week correlation with physical health domain ($r = .169$; $p < .05$), psychological domain ($r = .225$; $p < .01$). Moreover, there negatively week correlation between denial and physical health domain ($r = .163$; $p < .05$), environment domain ($r = .169$; $p < .05$). Furthermore, there was also negatively week correlation between self-blame and physical health domain ($r = .190$; $p < .01$), psychological domain ($r = .185$; $p < .01$).

Table 4. Spearman's correlation between WHOQOL-BREF and Brief COPE

	Physical health	Psychological	Social relationship	Environment
Problem-focused coping strategies				
Active coping	.063	.146*	.077	.044
Planning	.046	.148*	.104	.070
Religion/Spirituality	-.015	.048	-.129	-.029
Positive reframing	.212**	.112	.138	.144*
Acceptance	-.056	-.026	-.104	-.046
Using emotional support	.079	.094	.068	.130
Using instrumental support	-.032	-.044	-.015	.026
The positive emotion oriented coping strategy				
Self-distraction	.300**	.300**	.329**	.346**
Humor	.401**	.383**	.307**	.270**
Negative emotion oriented coping strategy				
Venting	-.223**	-.221**	-.159*	-.206**
Behavioral disengagement	-.169*	-.225**	-.111	-.089
Denial	-.163*	-.083	-.086	-.169*
Substance use	-.029	.038	.022	-.034
Self-blame	-.190**	-.185**	-.095	-.083

**p< .01, *p< .05

In this study, the relationship between demographic factors and sub-scales of WHOQOL-BREF and Brief COPE was examined. When the relationship between age groups with regard to sub-scales was analyzed, it can be seen that there was a breaking point at the age of 55. According to Mann-Whitney U test results, there was a statistically significant difference between age groups (54 years and below, 55 years and above) with regard to physical health domain (Mann-Whitney U, $z = -4.18$, $p < .05$), psychological domain (Mann-Whitney U, $z = -4.38$, $p < .05$) and social pressure domain (Mann-Whitney U, $z = -2.11$, $p < .05$) of quality-of-life sub-scales. For all three variables (physical health domain, psychological domain, social pressure domain), individuals who were 55 and older have higher scores.

Moreover, there was a statistically significant difference between age groups (54 and below, 55 and above) with regard to positive reframing (Mann-Whitney U, $z = -2.10$, $p < .05$),

Table 5. Comparison of the treatment duration with regard to WHOQOL-BREF sub-scale scores

Treatment duration	n (201)	Mean Rank	χ^2	p
Physical health				
Less than 1 year	44	85.35	7.862	.020*
1-2 years	76	95.45		
More than 2 years	81	113.63		
Psychological				
Less than 1 year	44	93.15	5.252	.072
1-2 years	76	92.90		
More than 2 years	81	111.76		
Social relationship				
Less than 1 year	44	91.74	9.103	.011*
1-2 years	76	90.24		
More than 2 years	81	115.06		
Environment				
Less than 1 year	44	91.64	1.432	.489
1-2 years	76	104.40		
More than 2 years	81	101.67		

denial (Mann-Whitney U, $z = -2.26$, $p < .05$), humor (Mann-Whitney U, $z = -1.97$, $p < .05$), venting (Mann-Whitney U, $z = -2.70$, $p < .05$), and self-blame (Mann-Whitney U, $z = -2.49$, $p < .05$). Positive reframing was a problem-focused coping strategy and humor was a positive emotion-focused coping strategy. For both variables, positive reframing and humor, individuals who were 55 and older have better scores than individuals who were 54 and younger. On the other side, for denial, venting and self-blame as a negative emotion-oriented coping strategy, individuals who were 54 and younger had higher scores.

According to Mann-Whitney U results, married individuals had higher environmental domain scores than non-married individuals (Mann-Whitney U, $z = -2.36$, $p < .05$).

Table 5 and Table 6 show the difference between the duration of treatment with regard to sub-scale scores. According to Table 5, some of the quality-of-life sub-scale scores of individuals were increased as the duration of treatment extends. Especially after the second year of treatment, mean ranks increased significantly. Along with that, as treatment duration prolonged, the physical health domain (Kruskal-Wallis test $\chi^2(2) = 7.862$, $p < .05$) and social relationship domain (Kruskal-Wallis test $\chi^2(2) = 31.11$, $p < .05$) scores were increasing consistently. (Table 5)

Table 6 shows that, there was a statistically significant difference among the classifications of treatment duration with regard to positive reframing, using emotional support, self-distraction, humor, venting, denial and self-blame.

Table 6. Comparison of the treatment duration with regard to Bref COPE sub-scale scores

Treatment Duration	n (201)	Mean Rank	χ^2	p
Problem-focused coping strategies				
Active coping				
Less than 1 year	44	92.36	1.986	.370
1-2 years	76	106.33		
More than 2 years	81	99.44		
Planning				
Less than 1 year	44	100.50	2.251	.325
1-2 years	76	93.89		
More than 2 years	81	106.78		
Religion/Spirituality				
Less than 1 year	44	101.23	.127	.938
1-2 years	76	98.83		
More than 2 years	81	101.69		
Positive reframing				
Less than 1 year	44	86.08	6.432	.040*
1-2 years	76	97.83		
More than 2 years	81	110.97		
Acceptance				
Less than 1 year	44	99.41	2.546	.280
1-2 years	76	107.68		
More than 2 years	81	94.28		
Using emotional support				
Less than 1 year	44	94.92	6.057	.048*
1-2 years	76	93.11		
More than 2 years	81	110.59		
Using instrumental support				
Less than 1 year	44	106.20	1.011	.603
1-2 years	76	96.37		
More than 2 years	81	101.29		
The positive emotion oriented coping strategy				
Self-distraction				
Less than 1 year	44	84.91	18.361	.000*
1-2 years	76	89.42		
More than 2 years	81	119.60		
Humor				
Less than 1 year	44	79.08	19.151	.000*
1-2 years	76	93.36		
More than 2 years	81	119.06		
Negative emotion oriented coping strategy				
Venting				

Table 6. Comparison of the treatment duration with regard to Bref COPE sub-scale scores (continued)

Less than 1 year	44	113.45	13.509	.001*
1-2 years	76	109.70		
More than 2 years	81	84.63		
Behavioral disengagement				
Less than 1 year	44	99.50	3.006	.222
1-2 years	76	105.03		
More than 2 years	81	96.75		
Denial				
Less than 1 year	44	100.65	6.586	.037*
1-2 years	76	111.88		
More than 2 years	81	89.61		
Substance use				
Less than 1 year	44	101.30	2.040	.361
1-2 years	76	101.62		
More than 2 years	81	99.00		
Self-blame				
Less than 1 year	44	114.88	8.311	.016*
1-2 years	76	105.45		
More than 2 years	81	87.89		

According to Table 6, Brief COPE positive sub-scale scores (problem-focused coping strategies, the positive emotion-oriented coping strategy) of individuals were increased as the duration of treatment extends. Especially after the second year of treatment, mean ranks increased significantly. On the other side, negative sub-scale scores (the negative emotion-oriented coping strategy) of individuals were decreased as the duration of treatment extends. (Table 6)

According to Table 6, as treatment duration prolonged, problem-focused coping strategies as positive reframing (Kruskal-Wallis test $\chi^2(2) = 6.432, p < .05$) and using emotional support (Kruskal-Wallis test $\chi^2(2) = 6.057, p < .05$), and positive emotion-oriented coping strategies as self-distraction (Kruskal-Wallis test $\chi^2(2) = 18.361, p < .01$) and humor (Kruskal-Wallis test $\chi^2(2) = 19.151, p < .01$) increased. On the other side, as treatment duration prolonged, negative emotion-oriented coping strategies as venting (Kruskal-Wallis test $\chi^2(2) = 13.509, p < .01$), denial (Kruskal-Wallis test $\chi^2(2) = 6.586, p < .05$) and self-blame (Kruskal-Wallis test $\chi^2(2) = 8.311, p < .05$) decreased especially after the second year of treatment.

DISCUSSION

In this study, it is seen that all sub-scales of WHOQOL-BREF were positively correlated with each other, similar to previous researches which show each domain of WHOQOL-

BREF correlates and supports each other (20,21).

Several studies show that there is a significant relationship between coping variables and quality of life (10,11,22). In this study, there is a correlation between the quality of life and coping strategies of lung cancer patients. Each quality-of-life domains were correlated with some sub-scales of Brief COPE. The findings illustrate that lung cancer patients who used both problem-focused and positive emotion-oriented coping strategies achieved a higher quality of life scores in all domains. On the other side, negative emotion-oriented coping strategies will lead to lower quality of life scores. As Gardner et al. (23) emphasized, effective coping strategies are crucial to maintaining the quality of life and psychological well-being.

Especially, positive emotion-oriented coping strategies were closely related to all sub-scales of quality of life. The importance of using emotions to improve the quality of life is specifically identified by the participants in other studies (24). On the other side, negative emotion-oriented coping strategies as venting, denial, self-blame, and behavioral disengagement were negatively correlated with quality of life. Consequently, although other research indicate that denial and similar strategies are widely used in fighting against lung cancer (24), it seemed that these negative emotion-oriented strategies were not effective in increasing the quality of life.

The present study, indicated that married individuals had higher environmental domain scores than non-married individuals. As Yıldırım (26) stated, it is clear that medical treatment and psychosocial support must be presented together in order for the patient to benefit from treatment. Other researches also show that social support has a positive effect on the quality of life (27).

Lung cancer incidence was strongly related to age with the highest rates being in older males and females. It is rarely seen in people under 45 years old and it is mostly diagnosed at the ages between 50 and 70 (28). The devastating effect of lung cancer on individuals varies by age. Mor (29) suggests that younger people had more severe impairment in overall quality of life compared to older participants. According to finding of this research, individuals who are 55 years and above have higher problem-focused coping strategies, positive emotion-oriented coping strategies and quality of life scores. Also, they have lower negative emotion-oriented coping strategies scores. It is believed that the underlying reason for this difference may be that individuals who are older have reached a certain age and maturity. In addition to this, being older enables the patient to feel less fear in the face of death anxiety.

Several studies suggest that financial status associated with employment affects the quality of life and coping skills (30,31).

When considering the financial status, the participants of this study who were mostly middle or low-income individuals, needed free accommodation. Although the research group did not include anyone from the upper-income category, the results showed that the difference in income status affected different domains of life quality. Individuals with higher income level have higher scores in social relationship domain and environment domain.

Ellis et al. (25) suggest that acceptance is not an immediate response but something that is negotiated and renegotiated over time. Once a person is able to achieve this he or she is better able to get on with life rather than worrying about the future. Supporting this, findings of this research show that as treatment duration is prolonged, problem-focused coping strategies, positive emotion-oriented coping strategies and the quality of life scores are increasing, and negative emotion-oriented coping strategies scores are decreasing. Thus, as patients accept the disease, they comply with the disease process, and as they internalize the disease, they will be able to better cope with it and enhance their quality of life.

CONCLUSION

In conclusion, it is found that there is a significant relationship between some sub-scales of coping variables and quality of life. In general, the findings illustrate that lung cancer patients who used both problem-focused and positive emotion-oriented coping strategies achieve a higher quality of life scores in all domains. Thus, the effective use of positive emotion-oriented coping strategies and problem-focused coping strategies are crucial. Moreover, age, income and the duration of treatment affect both quality of life and coping strategies of lung cancer patients. As a result, it is the impact of socio-demographic variables on coping strategies and quality of life should be considered when working with lung cancer patients.

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Conflict of Interests

The authors declare that they have no conflict of interests regarding content of this article.

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Ethical Declaration

Permission was obtained from the Hacettepe University, Medical Faculty Clinical / Human Research Ethics Committee for this study with date 02.01.2018 and number G017/996-21, and Helsinki Declaration rules were followed to conduct this study.

Authorship Contributions

Concept: EE, HA, CB, Design: EE, HA, CB, Data collection and entry: HA, CB, Analysis and interpretation: HA, CB, Literature search: EE, HA, CB, Writing: HA, CB, Critical review: EE, HA, CB

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