Assessment of psychological distress and quality of life in lung cancer patients receiving chemotherapy: A single center experience

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ABSTRACT

Background: Lung cancer is one of the most common malignant diseases with high mortality. Patients diagnosed with lung cancer are most likely to exhibited psychiatric symptomatology while they experience poor quality of life.
Purpose: To examine the relationship between psychological distress and quality of life (QoL) in lung cancer patients receiving chemotherapy.
Methods: A cross sectional study was conducted in which 110 lung cancer patients were recruited to participate. Data was collected with an anonymous self-administrated question-naire consisted by three parts: a sheet concerning demographic information, the scales Missoula Vitas Quality of Life Index-15 and General Health Questionnaires (GHQ)-28.
Results: Women accounted for 51.8% of the sample, 27.3% were ≥56 years old and 24.5% were in the age between 35-44. Moreover, 38.2% were high school graduates while 46.4% were married. Age, educational level, and marital status were found to be related to patients' perceived QoL. QoL was found to be related to psychological variables for GHQ-28.
Conclusions: Quality of life can be considered to be a result of disease and treatment, as perceived by the patient and is affected by factors such as injury, anxiety, perceptions and social opportunities. This has a direct effect on patients' functioning and ability to self-care.
Keywords: Lung cancer, psychological distress, quality of life

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INTRODUCTION

Lung cancer is one of the most common malignant diseases with high mortality among male patients and the second among female patients after breast cancer. It is estimated the lung cancer is responsible for the 19.4% of deaths caused by cancer. According to Ferlay et al in Greece 6.884 new cases of lung cancer were reported in 2013 leading to the death of 6.434 patients, 22.6% from the total of cancer deaths [1,2].

As part of a standardized chemotherapy regimen, one or more anti-cancer drugs are used. Chemotherapy may be given with a curative intent, or it may aim to prolong life or to reduce symptoms known as palliative chemotherapy. It can be perceived by the patients as a more threaten procedure than cancer itself, mostly due to the representation which, as a treatment, has. Thus, it can be a psychological challenge for the patients [3].

Changes in body image and fear of dying often can affect psychological state of these patients. Moreover, it can induce emotional reactions such as depression, anxiety, agitation, and somatization. In general, the prevalence of anxiety and depression in cancer patients is very high [4].

In addition, it is estimated that, approximately, one-third of all cancer patients will experience distress. Psychological distress is described in the literature as an unpleasant emotional experience of psychological (cognitive, behavioral, emotional), social and/or spiritual nature that may interfere with the ability to cope effectively with cancer, its physical symptoms and its treatment.

Despite the fact that cancer patients exhibiting many psychosocial needs and they are in high risk for psychological distress, these needs are often neglected by healthcare professionals [5,6]. Patients diagnosed with lung cancer are most likely to exhibited psychiatric symptomatology with prevalence 43.3% in contrast with the 29.6% of those suffering from gynecological cancer. The concept of quality of life is gaining the interested of researchers worldwide especially within the context of chronic and life threatening diseases such as cancer. According to World Health Organization, QoL is the individual's perception regarding values and cultural characteristics of the society, its goals, expectations, interesting and concerns [7].

A functional definition for QoL is that it is seen as a multidimensional construct defined by at least three sub-domains, including physical, emotional and social aspects of well-being [8,9].

To date there is a lot of research focusing on chemotherapy and its association with survival, effects on pain, symptoms and other clinical variables. The aim of this study was to examine the quality of life of lung cancer patients receiving chemotherapy and its association with psychological distress. The research hypotheses of this study were that cancer patients rate their QoL low [10]; they experience psychological distress [11] while a negative relationship between these parameters is expected to be found [12]. Also, it is expected that social and demographic factors may affect the QoL [13].

MATERIALS AND METHODS

A cross-sectional study was contacted in the pulmonary clinic during May and June of 2016.

A cohort of 110 patients undergoing chemotherapy in pulmonary clinic of the General Hospital of West Attica was recruited. The inclusion criteria were:

- 18 years of age and older;
- ability to speak and read Greek;
- receiving only chemotherapy investigators inspected demographic information to determine that the participants met the inclusion criteria.

For those who did not, the data was discarded.

All valid data was entered into a spreadsheet format, and analyses were performed using Statistical Package for Social Sciences, version 20.0.

Ethics

Written consent as approved by the Ethics and Scientific Committee of the Hospital where this study was conducted. In addition, a written consent statement for patients' voluntary participation was taken.

Patients were informed that the data will be anonymous and that they will be used only for the purposes of the study.

Data Collection

Data were collected using questionnaires which were distributed to the cancer patients and were returned anonymously within an envelope in order to assure confidentiality.

The questionnaire was consisted of three parts:

- demographic data
- the scale Missoula – Vitas Quality of Life Index (MVQoLI -15)
- the scale General Health Questionnaire-28.

Demographic characteristics of patients such as gender, age, place of residence, educational level marital and employment status were recorded.

The scale Missoula–Vitas Quality of Life Index-15 (MVQoL-15).

The MVQoLI-15 is a self-reported measure consisted by 15 items which gathers patient-reported information about QoL during advanced illness.

Its purpose is to describe subjective quality of life of patients in a way that can be quickly interpreted by health professionals in order to assist them in identifying and addressing patients' concerns that affect QoL.

It covers five dimensions or domains of quality of life:

- Symptoms
- Functionality,
- Interpersonal Relationships
- Wellbeing
- Transcendent.

Moreover, it has a general question about the overall quality of life.

All the questions are closed-ended and responses are based on a 5-Likert scale ("strongly agree" to "strongly disagree"). It was created by Byock and Merriman and translated and validated in Greek by Theophilou et al (2014) [14].

The General Health Questionnaire-28 (GHQ-28) was developed by Goldberg in 1978 and it is used as a screening tool to detect those likely to have or to be at risk of developing psychiatric disorders. It is a 28-item measure of emotional distress in medical settings. GHQ-28 is divided into four subscales:

- "Somatic Symptoms" (items 1–7);
- "Anxiety/Insomnia" (items 8–14);
- "Social Dysfunction" (items 15–21),
- "Severe Depression" (items 22–28) (Goldberg, 1978).

It takes less than 5 minutes to complete. Items of GHQ-28 are scored as 0 for the first two responses on a Likert type scale and 1 for the other two. Scores from 4 and above indicate the presence of the corresponding disorder [15].

Statistical analysis

Data were preceded using IBM SPSS v.20 for windows. Descriptive statistics were initially generated in order to describe samples' answers. Results are presented in the form of frequencies, means, and standard deviations. In order to investigate differences in scores of the scales between the various groups of the sample according to demographic data Student's t-test and One Way, ANOVA was used. Pearson correlation test was used to examine the possible correlation between QoL domains and GHQ-28 domains. The level of statistical significance was set up to p= 0.05

RESULTS

Demographic structure of the sample

The majority of the sample were women (51,8%), 27,3% of the sample were ≥55 and 24.5% were in the age 35-44. Moreover, 38.2% were high school graduates and the 46.4% were married. The majority of the sample were freelancer (37.3%). Detailed information on sample's characteristics are presented in table 1.

As is seen in table 2, means scores of each subscale of the GHQ-28 is less than 4. This fact indicates that patients don't experience psychological distress. Furthermore, the mean score of patients' evaluation for their own overall QoL was 2.56. In addition, as is shown in table 2, in four from five domains ("Well-being", "Symptoms", "Functionality", "Transcendence") of MVQoL-15, patients had negative score supporting the fact that they had poor QoL. The only domain that they had positive scores was the one of "Interpersonal Relationship" (12.50±10.94).

Bivariate analysis (table 3) was generate to investigate the relation between the Missoula Vitas QoL-15 scores and GHQ-28 scores (depended variables) and patients characteristics (independent variable). Men had a greater mean score in "Interpersonal Relationships" than women (14,33±9.9 vs 10,78±11.6, p=0.03). Younger patients less than 25 years old exhibited poorer QoL and negative effects of "Symptoms" (p=0.001 in both cases). Divorced patients had greater scores than widowed in "Wellbeing" domain (p=0.015). Finally, regarding educational level, elementary school graduates marked higher scores in "Functionality" and "Interpersonal Relationships" (p= 0.008 in both cases).

Upon the examination for the possible correlation between QoL and GHQ -28 (table 4) it was found that "Somatic Symptoms" were negatively related to overall QoL (R=-.350 p= 0..000), Symptoms (R= -.371 p=0.000) and Transcendent (R= -.208 p=0.030).

Anxiety was negatively related to overall QoL (R= -.348 p= 0.000), Symptoms (R= -.328p=0.000) and Transcendent (R= -.366 p=0.000).

Social Dysfunction was negatively related to overall QoL (R= -.380 p= 0..000), Symptoms (R= -.395 p=0.000) and Transcendence (R= -.255 p=0.007).

Depression was negatively related to overall QoL (R= -.362p= 0.000), Symptoms (R= -.222p=0.020), Transcendent (R= -.270 p=0.004) and Interpersonal Relation (R= -.268 p= 0..005).

Finally, the total score of GHQ-28 was negatively related to overall QoL (R= -.437 p= 0.000), Symptoms (R= -.387 p=0.020), Transcendent (R= -.333 p=0.004) and Interpersonal Relation (R= -.205 p= 0.032).

Table 1. Demographic Structure of the sample

	n	Percentage
Gender		
Male	53	48.2
Female	57	51.8
Total	110	100
Age Group		
Up to 25	6	5.5
26-35	23	20.9
36-45	27	24.5
46-55	24	21.8
56 and above	30	27.3
Total	110	1000.0
Marital Status		
Not married	29	26.4
Married	51	46.4
Divorced	23	20.9
Widowed	7	6.4
Total	110	100
Area of residence		
Urban	83	75.5
Suburban	9	8.2
Rural	17	15.5
Total	109	99.1
Occupation		
Public Sector	4	3.6
Private Sector	24	21.8
Free Lancer	41	37.3
Pensioner	8	7.3
House Holding	14	12.7
Student	7	6.4
Unemployed	12	10.9
Total	110	1000.0
How do you describe your QoL		
Very poor	12	10.9
Poor	33	300.0
Moderate	56	50.9
Good	9	8.2
Total	110	100

Table 2. Descriptive statistics of MVQoL index and GHQ28

	Minimum	**Maximum**	**Mean**
MVQoL			
Wellbeing	-30.00	10.00	-15.8073
Interpersonal Relationships	-16.00	30.00	12.5000
Symptoms	-30.00	12.00	-9.8091
Functionality	-30.00	16.00	-7.6455
Transcendent	-30.00	16.00	-4.4404
Global QoL	-30.00	10.00	-15.8073
GHQ 28			
Anxiety	1.71	4.00	3.1846
Somatic Symptoms	1.93	3.93	3.0608
Depression	1.00	4.00	2.5255
Social Dysfunction	1.00	4.00	2.5255
Total of GHQ-28	1.93	3.93	3.0608

Table 3: Means and Std in demographic characteristics

	Overall QoL	Symptoms	Well-being	Functionality	Transcendent	Interpersonal Relationships	Somatization	Anxiety	Social dysfunction	Depression	Overall GHQ-28
Gender	**Mean ± Std**										
Male	2.50±0.7	-5.21 ± 12.1	-15.28 ± 6.8	-8.81±11.6	-5.21±12.1	14.33±9.9	3.0539±0.4	3.1662± 0.4	2.5759±0.5	2.57±0.5	3.0539±0.4
Female	2.6±0.8	-3.73± 9.7	-16.28 ±5.7	-6.56±10.1	-3.73±9.7	10.78±11.6 **Men> Women p=0.03**	3.0671±0.38	3.2018±0.3	2.4787±0.6	2.47±0.6	3.0671±0.3
Age Group											
-25	3.47±0.3	-12.50±18.2	-17.83±15.0	17.33±13.9	-12.50±18.2	17.33±13.9	3.32±0.3	3.47±0.3	2.74±0.6	2.74±0.6	3.32±0.3
26-35	3.28±0.3	-5.26±10.8	-17.34±4.6	8.2±11.5	-5.26±10.8	8.26±11.5	3.09±0.4	3.28±0.3	2.59±0.8	2.59±0.8	3.09±0.4
36-45	3.02±0.4	-4.18±8.3	-15.18±6.3	12.22±11.4	-4.18±8.3	12.22±11.4	2.91±0.3	3.02±0.4	2.3±0.5	2.34±0.5	2.91±0.3
46-55	3.12±0.3	-4.21±10.9	-15.86±3.8	11.45±9.9	-4.21±10.9	11.459±9.9	3.05±0.3	3.12±0.3	2.52±0.5	2.52±0.5	3.05±0.3
56+	3.24±0.4	-2.60±11.3	-14.73±6.3	15.86±9.3	-2.60±11.3	15.86±9.3	3.11±0.3	3.24±0.4	2.58±0.4	2.58±0.4	3.11±0.3
Marital Status	**-25>26+ p=0.001**	**-25>26+ p=0.01**									
Single	3.34±0.4	-7.14±12.9	-17.46±7.8	12.48±13.1	-7.14±12.9	12.48±13.1	3.19±0.3	3.34±0.4	2.75±0.6	2.75±0.6	3.19±0.3
Married	3.13±0.3	-3.23±10.7	-15.11±4.9	12.82±10.4	-3.23±10.7	12.82±10.4	3.04±0.3	3.13±0.3	2.49±0.5	2.49±0.5	3.04±0.3
Divorced	3.13±0.4	-4.26±9.1	-13.69±6.0	10.86±9.3	-4.26±9.1	10.86±9.3	3.00±0.4	3.13±0.4	2.43±0.6	2.43±0.6	3.00±0.4
Widowed	3.00±0.4	-3.00±9.6	-21.14±5.6	15.57±11.1	-3.00±9.6	15.57±11.1	2.83±0.4	3.00±0.4	2.14±0.4	2.14±0.4	2.83±0.4
			Divorced>Widowed p=0.015								
Educational Level											
Elementary	3.08±0.4	-2.70±10.3	-16.23±7.0	16.82±8.6	-2.70±10.3	16.82±8.6	2.96±0.3	3.08±0.4	2.44±0.4	2.44±0.4	2.96±0.3
High school Degree	3.19±0.4	-6.28±11.8	-15.04±5.9	8.90±11.2	-6.28±11.8	8.90±11.2	3.05±0.4	3.19±0.4	2.42±0.7	2.42±0.7	3.05±0.4
University Degree	3.29±0.3	-3.86±10.5	-16.23±6.2	12.00±11.8	-3.86±10.5	12.00±11.8	3.17±0.3	3.29±0.3	2.73±0.5	2.73±0.5	3.17±0.3

Table 4. Correlations between QoL and GHQ-28

r	Overall QoL	Symptoms	Functionality	Interpersonal Relationships	Wellbeing	Transcendent
Somatic Symptoms	**-0.350****	**-0.371****	-0.107	0.166	-0.153	**-0.208***
Anxiety	**-0.348****	**-0.328****	-0.103	0.104	-0.137	**-0.366****
Social Dysfunction	**-0.380****	**-0.395****	-0.086	0.099	-0.171	**-0.255****
Depression	**-0.362****	**-0.222***	-0.104	-0.**268****	-0.050	**-0.270****
Total GHQ-28	**-0.437****	**-0.387****	-0.122	**-0.205***	-0.146	**-0.333****

**. Correlation is significant at the 0.01 level (2-tailed); *. Correlation is significant at the 0.05 level (2-tailed).

DISCUSSION

Lung cancer is a major public health concern worldwide. This issue deserves more and more research in order to promote better care and quality of life for patients dealing with it. Purpose of this study was to evaluate the association between QoL and psychological distress among lung cancer patients undergoing chemotherapy. According to the findings of this study, patients experienced low levels of quality of life but they didn't experience psychological distress.

A percentage of 50.9% of our sample rated the overall quality of life as moderate, while according to other studies related to QoL in lung cancer patients, QoL was found to be rather low [16,17]. Our results are in agreement with studies on QoL in other types of cancer undergoing chemotherapy [18,19]. Moreover, lower scores were reported in "Well-being", "Functionality" and "Symptoms." Most of cancer patients and especially, lung cancer patients who receive chemotherapy, experience symptoms such as fatigue, lack of energy and in some cases, patients cannot cope with the daily demands on their own [20,21].

Despite the fact that low scores were reported in "Transcendent," most of the patients reported that their life has greater meaning now than before. It is widely agreed and documented that having a sense of hope and a purpose in life can enhance spiritual well-being. Other studies on patients undergoing chemotherapy have shown that these patients declare an amount of spiritual needs [18], a fact that can integrate the low scores in "Transcendence" dimension of our sample. In contrast with other studies, our results didn't indicate any difference in "Transcendence" score between the two genders or other demographic factors in lung cancer patients [22].

"Interpersonal relationships" can be an important factor which can influence QoL of the patients. Higher scores in this domain of QoL can indicate the perceived social support that patients have and how important this is to their life. Moreover, it has been negatively related to depressive symptoms and the overall distress score on GHQ-28. Our results are in agreement with previous studies among lung cancer patients and cancer patients in general which had found that the perceived social support can affect positively QoL and mental health among cancer patients [23-24]. Cancer and its treatment may induce enormous changes in their life which affect their ability to communicate effectively. The relationships of patients with others and, especially with family members, are vital and of a great importance as they are stated by the patients in the corresponding item on MVQoLI-15.

Regarding the health parameters which were examined in our study and, specifically, "Anxiety" subscale of GHQ-28, our results didn't find that responders were suffering from the above disorder. Yet, most of them stated that they had sleep problems in a larger extent than usual. Chronic anxiety, depression and social isolation is very common [25,26]. Thus, the relationship between cancer and anxiety is characterized by a complexity, heterogeneous and multifactorial pathogenesis. Patients of our study seemed to suffer from a moderate social dysfunction and they stated that their condition has worsened the ability to cope with social abilities and to pump satisfaction from daily activities. It is obvious that cancer and chemotherapy may affect the social function and social life of patients [27]. Finally, it is very common among cancer patients to experience depressive symptoms which have negative influence in QoL and they have been found to be related with other disorders such as anxiety [28].

Age, educational level and marital status were found to influence patients perceived QoL. On the other hand, gender and occupation didn't seem to differentiate QoL in our study. This fact is in agreement with other studies reporting similar results [29,30].

As far as limitations are concerned, we could refer that clinical variables such as duration

of the disease and stage of cancer, should be examined as these facts could influence QoL and distress of patients. Moreover, the kind of operative treatment and the possible combinations of therapy could be examined too. Additionally, QoL should be examined at the start point of chemotherapy and at the end of it so to understand to what extent the therapy affecting QoL.

CONCLUSIONS

Quality of life can be considered to be a result of disease and treatment, as perceived by patients and is affected by factors such as injury, anxiety, perceptions and social opportunities. QoL of patients of the sample is moderate and the burden of the disease and chemotherapy may cause difficulties in patients' daily life and their social life, as well. This has a direct effect on their functioning and in their ability to self-care.

Finally, future research is needed in order to explore clinical parameters which could affect the quality of life and mental health of lung cancer patients undergoing chemotherapy.

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Conflicts of interest

Authors have none conflicts to declare

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