


Uncertainty and hope in relation to anxiety and depression in advanced lung cancer

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ABSTRACT

Objectives Intolerance of uncertainty (IU) has been linked to greater psychological distress, whereas hope appears to act as a protective factor against in patients with cancer. The aim of this study is to analyse the modifying effect of uncertainty in the presence of anxiety and depression in patients with advanced lung cancer.

Methods Multicentre, prospective, observational, cross-sectional study of 145 individuals with advanced lung cancer. Participants completed the following questionnaires: IU Scale, Hert Hope Index, Brief Symptom Inventory.

Results Among patients with advanced lung cancer, anxiety and depression were prevalent, 30% and 35%, respectively. Uncertainty and hope with respect to their illness negatively affected their psychological distress. Hope and uncertainty accounted for 22% of the variance in anxiety and 34% of depressive symptoms. The hypothesised modifying effects (uncertainty×hope) was not supported in the depressive and anxious symptom models.

Conclusions Our findings indicate that hope and uncertainty are important considerations in understanding mental health in people diagnosed with advanced lung cancer. Identifying patients who lack the resources needed to manage uncertainty and hope in relation to their disease could inform psychosocial intervention provision to improve quality of life.

INTRODUCTION

Lung cancer has the highest incidence in our setting, yet is one of the least prevalent.¹ In recent years, new therapies have improved its prognosis. Nevertheless, despite all therapeutic efforts, the truth is that the estimated 5-year survival rate

WHAT WAS ALREADY KNOWN?

⇒ Uncertainty and hope have been linked to greater psychological distress in patients with cancer.

WHAT ARE THE NEW FINDINGS?

⇒ Anxiety and depression were prevalent in patients with advanced lung cancer. Hope and uncertainty accounted for 22% and 34% of the variance in anxiety and 34%, respectively.

WHAT IS THEIR SIGNIFICANCE?

⇒ Helping patients with lung cancer to manage uncertainty and hope can improve quality of life. Clinical studies are important in order to identify the factors that influence the quality of life in advanced lung cancer patients.

for metastatic lung cancer continues to be <5%.¹ Given its aggressive course, its copious symptomatology, and the impact of antitumoural treatments on quality of life, lung cancer affects substantially patients' psychological functioning and well-being.¹ The initial diagnosis of lung cancer can increase feelings of loss of control and generate intense psychological distress in some individuals.² However, regardless of the uncertainty, others are able to maintain unwavering confidence in a better future.³

Given the course of lung cancer, assessing the factors that affect psychological distress, particularly intolerance of uncertainty (IU), is imperative. IU is the inability to resist the idea that negative events may occur and are unpredictable.³ High IU has been identified as a vulnerability factor for anxiety and depression.³ Hope is another factor that has been correlated with mental health. In studies



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Table 1 Linear regression analyses to predict anxious and depressive symptoms

	B	Beta	T	P value	R _a ²	F
Anxiety					21.5	20.349
Constant	74.443		12.557	0.001		
Hope	-0.442	-0.349	-4.295	0.001		
Uncertainty	0.538	0.214	2.641	0.009		
Hope × uncertainty	0.017	0.293	0.631	0.529		
Sex	0.002	0.001	0.001	0.999		
Age	-0.122	-0.148	-1.913	0.058		
Histology	0.964	0.052	0.633	0.528		
Risk recurrence	0.814	0.049	0.616	0.539		
Depression					34.3	37.727
Constant	78.998		16.707	0.001		
Hope	-0.547	-0.495	-6.668	0.001		
Uncertainty	0.404	0.185	2.486	0.014		
Hope × uncertainty	0.020	0.389	0.915	0.362		
Sex	-1.243	-0.084	-1.180	0.240		
Age	-0.048	-0.067	-0.943	0.347		
Histology	0.141	0.009	0.116	0.908		
Risk recurrence	-0.737	-0.051	-0.697	0.487		

B, non-standardised coefficient; Beta, standardised coefficient.

of people with recurring cancer and seriously ill, hope is one factor that decreases anxiety and/or depression.²⁻⁴ The term 'hope' denotes the belief or desire for a positive outcome or fulfilment related to one's circumstances.⁵

While both uncertainty and hope have been examined in cancer sufferers,² so far as we know, there are no studies that associate both factors with anxiety and depression in subjects with advanced lung cancer. We sought to analyse the modifying effect of uncertainty and hope vis-à-vis anxiety and depression in people with advanced lung cancer.

METHOD

Design and participants

NEOetic is an observational, prospective, cross-sectional study of the Bioethics Group of the Spanish Society of Medical Oncology with the participation of 19 Spanish centres. The target population comprises adults (>18 years) diagnosed with locally advanced, unresectable or metastatic lung cancer. Individuals with dementia or any other serious mental illness preventing them from comprehending the purpose of the study and questionnaires or who had received perioperative oncological treatment or treatment for another advanced cancer in the 4 years previous were excluded.

Measures

Data from subjects' clinical history and self-report questionnaires completed at home after signing informed consent were collected through a web platform (www.neoetic.es).

The scales used were Brief Symptom Inventory (BSI), Michel Uncertainty in Illness Scale (MUIS) and Herth Hope Index (HHI). The BSI assesses anxiety and depression using 12 items scored on a 5-point Likert scale.⁶ Each subscale's total score is 0–24; higher scores indicate greater anxiety or depression. Raw scores are converted to T-scores, based on sex-specific normative data. T-scores ≥ 67 were indicative of 'possible anxiety or depression' and T-scores ≥ 63 were classified as 'probable anxiety or depression' as per cut-off values recommended by Derogatis.⁶ The five-item MUIS quantified uncertainty, scoring each item on a 5-point Likert scale; thus, total scores vary from 5 to 25, with higher values designating greater uncertainty.⁷ The HHI appraise hope using 12 items scored on a 4-point Likert scale; total scores equal 12–48 with higher scores indicating greater hope.⁵

Statistical methods

Pearson correlations assessed the association between depressive symptoms and IU and hope. Moderated linear regressions followed the procedures defined by Field.⁸ Outliers were identified by scrutinising the regression assumptions (one case for depressive symptoms and one for anxious symptoms). Regressions were examined including and excluding outliers. Outlier exclusion improved model fit and modified the strength of the predictor. Using Cook's distance, outliers were identified as insignificant. Therefore, to be more conservative, we present regression analyses for depressive and anxious symptoms with all cases including outliers. Multicollinearity was examined using the variance inflation factor and tolerance;

multicollinearity among the variables was rejected by the variance inflation factor, which was <5 for all and tolerance >0.2 .⁸ To ascertain variables predictive for depressive and anxious symptoms, a two-block linear regression model was performed. In the first block, age, sex, histology and risk of recurrence were entered as independent variables. In the second, IU and hope were entered as criterion variables. Statistical significance was set at 0.05. Statistical analyses were performed with IBM-SPSS V.25.0.

RESULTS

Descriptive and bivariate correlations

Consent was given by 161 patients; however, after screening the data, cases missing at least one full scale (IU, HHI and BSI) were removed ($n=16$), leaving 145 cases in the final dataset. The sample was predominantly male (63%); mean age was 63.8 years (SD)=9.8, range 34–89; most were married (63%); 86% had at least one child and 43% had a primary level of education. Clinically, the most frequent histology was stage IV (78%) adenocarcinoma or epidermoid (73%). Chemotherapy and immunotherapy were the most common treatments. Median overall survival (OS) was 18 months. No significant differences in anxiety and/or depression were detected based on the socio-demographic or clinical variables analysed. As for BSI scores, 11% and 13% of the sample displayed some symptom of depression and anxiety ($T \geq 63$ to <67) and 35% and 30% had some clinical symptom of depression and anxiety ($T \geq 67$).

Moderated linear regression analysis

Moderated regression analyses were conducted to probe possible interactions between IU and hope on depressive and anxious symptoms, which correlated positively with uncertainty ($r=0.380$ and $r=0.352$, all $p<0.001$, respectively) and negatively with hope ($r=-0.563$ and $r=-0.433$, all $p<0.001$, respectively). In the first model, linear regression analysis revealed that hope and uncertainty accounted for 34% of the variance in depressive ($F=37.727$, $p<0.001$, adj. $R^2=34.3$) and 22% of the variance in anxious ($F=20.349$, $p=0.001$, adj. $R^2=21.5$) symptoms. In the second, the modifying effects (IU \times hope) were insignificant (see table 1).

DISCUSSION

This study endeavoured to explore the degree to which IU and hope can explain anxiety and depression in individuals with advanced lung cancer.

Our results indicate that uncertainty and hope are weighty in explaining psychological distress among individuals with advanced lung cancer. Specifically, they explain 22% of anxious and 34% of depressive symptoms. Similarly, uncertainty has been associated with anxiety and depression in people with ovarian,⁹ prostate¹⁰ and lung cancer.² The presence of IU has

also correlated with avoidance, suggesting that subjects with high levels of uncertainty would be more challenged to cope with the negative aspects of their disease proactively. As for hope, it has been related to lower levels of anxiety and depression. As hope increases, so does the belief that the disease can be cured and the expectation of survival.¹¹

Another noteworthy aspect of our series is that 30% had symptoms of anxiety and 35%, depression. This is in line with recent lung cancer cohorts, estimating anxiety at 9%–37% and depression at 19%–41%.^{12–14} People with advanced lung cancer represent a specific cancer population with high rates of mortality and depression.¹³ Median OS for advanced lung cancer without driver mutations is <12 months (7 months without systemic treatment). The presence of anxiety and depression is associated with worse treatment compliance, longer hospital stays, greater healthcare utilisation and higher mortality,^{12–14} so understanding factors that can decrease anxiety/depression is relevant to improving these patients' quality of life.

Our series reveals similar baseline characteristics to previous reports in epidemiological studies addressing advanced lung cancer, with a predominance of males, mean age of ≈ 60 –70 years, and the most prevalent histology was adenocarcinoma or epidermoid carcinoma.¹⁵ The high percentage of women in this sample (approximately one-third of the total) is especially noteworthy, reflecting the growing number of diagnoses among females.

Our findings must be regarded in conjunction with its limitations. First, it is cross-sectional; consequently, it was impossible to determine directionality of the observed relationships. Second, although the BSI has proven reliability in screening, it should be used in conjunction with a multidisciplinary, clinical approach to detecting and managing depression and anxiety. Finally, self-reports can lead to response biases, such as social desirability, memory errors, etc.

Clinical practice

Our findings are clinically and therapeutically relevant, as they demonstrate that anxiety and depression are prevalent in patients with incurable lung cancer and that uncertainty and hope might go far toward explaining these symptoms. Decreasing uncertainty and increasing hope can help these patients cope better with the end of life. Thus, hope goes beyond the desire for a cure and overcoming the disease, to include aspiration, expectations, the need to improve relationships, complete life's tasks, and leave a legacy for family and friends. This sweeping, realistic approach helps them adapt to the disease, give meaning to life and cancer itself.

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