ORIGINAL ARTICLE

# Undernutrition and quality of life in non small cell lung cancer patients[☆]

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**Abstract** Cancer is related to a deterioration of nutritional status and quality of life (QoL), but the extent of these conditions in patients with Non Small Cell Lung Cancer (NSCLC) has not been studied. The aim of the present study was to assess the association between QoL and undernutrition in NSCLC patients. Nutritional status was evaluated with Patient Generated — Subjective Global Assessment and QoL using the European Organization for Research and Treatment of Cancer Quality of Life — C30 and also with the specific module for lung cancer patients. A consecutive sample of fifty six patients diagnosed with NSCLC was evaluated. A high proportion of patients is undernourished (35.7%), 1.8% in early stages *vs* 33.9% in advanced stages of disease. Undernutrition is related to measured dimensions of QoL: lack of appetite (rho = 0.70), fatigue (rho = 0.54), nausea and vomiting (rho = 0.52) and constipation (rho = 0.56). Undernourished patients have worse global health status, physical, emotional, social and role functioning.

Patients with NSCLC have high frequency of undernutrition in advanced stages of disease. Undernourished patients present more symptoms, a worse global health status/QoL, physical, role, emotional and social functioning than patients without undernutrition. Undernutrition is associated with worse QoL, specifically in the parameters: appetite loss, nausea and vomiting, constipation and fatigue.
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**Desnutrição e qualidade de vida em doentes com cancro do pulmão não pequenas células**

**Resumo** O cancro está associado a uma deterioração do estado nutricional e da qualidade de vida (QdV), mas não se conhece a dimensão destas consequências nos doentes com cancro do pulmão não pequenas células (CPNPC). O objectivo deste estudo foi avaliar a associação entre a qualidade de vida e a desnutrição em doentes com CPNPC. O estado nutricional foi avaliado pelo *Patient Generated — Subjective Global Assessment* e a QdV foi avaliada através

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do *European Organization for Research and Treatment of Cancer Quality of Life — C30* e do módulo específico para doentes com cancro do pulmão. Foi avaliada uma amostra com cinquenta e seis doentes diagnosticados com CPNPC. Uma elevada proporção de doentes encontra-se desnutrida (35,7%), dos quais 1,8% em estádios precoces *vs* 33,9% em estádios avançados de doença. A desnutrição está associada a dimensões de QdV como a falta de apetite (rho = 0,70), fadiga (rho = 0,54), náuseas e vómitos (rho = 0,52) e também obstipação (rho = 0,56). Os doentes com CPNPC apresentam elevada frequência de desnutrição nos estádios avançados de doença. Os doentes desnutridos apresentam mais sintomatologia e piores estado de saúde global, de funcionamento físico, emocional, social e de desempenho, do que os doentes sem desnutrição. A desnutrição está associada com pior QdV, especificamente nos parâmetros: falta de apetite, náuseas e vómitos, obstipação e fadiga.

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## Introduction

Undernutrition is a common problem in patients with cancer, frequency varies according to location of tumor, the stage of the disease and the type of treatment.[1] Awareness concerning nutritional status of patients with lung cancer is scarce, however it is estimated that 46% of these patients are undernourished.[1] Weight loss affects the response to treatment and the susceptibility to adverse effects leading to a worse prognosis and Quality of Life (QoL).[2–4] Undernutrition can progress to cachexia, which encompasses a large spectrum of situations ranging from weight loss to a state associated with a severe disability that generally leads to death.[2,5]

The QoL is an important outcome of the disease and its treatment and represents a growing concern in controlling the disease. The QoL is described as a prognostic factor in survival of patients with Non Small Cell Lung Cancer (NSCLC).[6,7] However, the extent of these conditions in patients with NSCLC is still to be evaluated. The aim of the present study was to assess the association between QoL and undernutrition in NSCLC patients.

## Materials and Methods

A cross-sectional study was conducted among outpatients of Pulmonary Oncology Department of *Centro Hospitalar de Vila Nova de Gaia/Espinho*, Portugal. Inclusion criteria were being Caucasian, over eighteen years old, with a histological diagnosis of NSCLC. Previous nutritional advice and the inability to complete the self-administration questionnaires were exclusion criteria. Patients were consecutively included in the study sample from October 2007 to May 2008.

The study protocol was approved by the Hospital Ethical Committee and the Administration Board of the study institution. All patients gave their informed consent to participate according with the recommended in the Declaration of Helsinki .[8]

### Data Collection

All the information was collected by the same interviewer (SX) using a structured questionnaire, with the exception of parameters that were validated in order to be assessed by self-administration questionnaires. Data on demographic and social characteristics, time of diagnosis (number of months between the diagnosis and date of assessment) and relevant clinical aspects (previous and current treatments and family history of cancer) was obtained.

Anthropometric data was collected applying standard procedures.[9] The percentage of weight loss (% weight loss), was calculated considering the usual weight prior to first symptoms or the weight registered in the first clinical consultation.

Scored Patient Generated Subjective Global Assessment (PG-SGA) was used to determine the patient's nutritional status[10–12] The PG-SGA provides a global rating of moderate or suspected undernourishment, to severely undernourished or not undernourished.[10–12] The scored PG-SGA is a further development of the PG-SGA concept that incorporates a numerical score used to define the strategies of nutritional intervention. [10–12]

The assessment of QoL was made by the European Organization for Research and Treatment of Cancer Quality of Life Questionnaire-C30 (EORTC-QLQ/C30) with the specific module to Lung Cancer, the European Organization for Research and Treatment of Cancer Quality of Life Questionnaire Lung Cancer Module (EORTC QLQ-LC13) which are the methods of QoL assessment most commonly used in Europe and which have proved to be the best tools developed to date.[13–16] The QLQ-C30 is composed of multi-item scales and single items that reflect the multidimensionality of the QoL construct.[15] The scales and individual items are rated from 0 to 100%. A high score in the state of global health and functional scales represents a high level of functioning and therefore better QoL, a high score for the scale of symptoms represents a high level of symptoms/ problems and therefore worse QoL. The coding of the questionnaire was performed according to recommendations of EORTC.[17] The QLQ LC13 comprises thirteen questions assessing the symptoms associated with lung-cancer, treatment-related side effects and pain medication. The scoring approach for the QLQ-LC13 is identical in principle to that for the symptom scales/ single items of the QLQ-C30.[17]

### Data Analysis

Participants were divided into two groups according to stage of disease: group 1 (stage I, II and IIIA) and group 2 (stage IIIB