An Evidence-Based Determination of Issues Affecting Quality of Life and Patient-Reported Outcomes in Lung Cancer

Results of a Survey of 660 Patients

Richard J. Gralla, MD, Patricia J. Hollen, PhD, RN, FAAN,† Pavlos Msaouel, MD, PhD,* Beverly Vincent Davis, RN, MSN,‡ and Judith Petersen, RN, MN, AOCN‡*

Introduction: Identifying issues of importance for patients with lung cancer is critical in individualizing care and developing effective quality of life instruments based on evidence. This study was conducted to provide enhanced content validity for measures assessing quality of life and patient-reported outcomes (PROs).

Methods: We conducted an anonymous, cross-sectional, electronic web-based survey of 660 lung cancer patients. The survey asked patients to rank 20 quality of life issues on a 5-point scale ranging from "not important at all" to "very important". Analysis was obtained using key factors such as stage of disease, performance status, and gender.

Results: The survey was completed by 297 males and 363 females (median age 62 years). The top five rated issues were: quality of life, maintaining independence, ability to perform normal activities, ability to sleep, and not being fatigued. The issues of importance were all ranked, using the two highest categories ("very important" and "important") by at least 90% of patients. Although symptoms are important to patients, they were not the most highly ranked issues of concern; instead, global issues illustrating the effect of the symptoms on the patient, such as quality of life, maintaining independence, and performing normal activities were ranked highest.

Conclusions: This is the largest analysis of evidence-based data determining content validity for quality of life and PROs as indicated by patients. These results provide greater confidence that the content of lung cancer quality of life measures is appropriate. In addition, the survey clearly demonstrates that PRO measures that only evaluate symptoms are not fully responding to patient-expressed needs.

Key Words: Content validity, Quality of life, Lung cancer

(*J Thorac Oncol.* 2014;9: 1243–1248)

Identifying key issues for patients with cancer is central to assessing quality of life and patient reported outcomes (PROs). Many quality of life and PRO questionnaires are available for patients with a variety of diseases and cancers;[1] however, these measures vary in the manner in which the developers chose items for inclusion. There has been concern that the items utilized in many of these measures may be based on limited input from patients. As articulated in the FDA 2009 guidance for industry document, "…without adequate documentation of patient input, a PRO instrument's content validity is likely to be questioned."[2]

As the concept of PROs has become increasingly evaluated in oncology, more cancer-specific measures have appeared. In lung cancer and thoracic malignancies, only a few measures have both published acceptable psychometrics and are in widespread usage.[3] Although the current project was initiated to expand the underpinnings of the frequently used measure the Lung Cancer Symptom Scale (LCSS), which has a well-recognized psychometric background,[3–5] the exercise could prove useful for other lung cancer PRO instruments as well.

The findings of this project, producing results reported by patients, could provide an evidence-based background for amending existing measures or in the development of newer instruments. This methodological approach for content validity is designed to determine which PRO items are most valued by large samples of patients with cancer. The specific aim was to determine whether scales that strictly investigate only symptoms provide a sufficient picture of PROs, or do patients tell us that global PRO items, such as distress from symptoms or the impact of symptoms on performing normal activities, afford a context that is necessary for an appropriate evaluation of symptoms.

MATERIALS AND METHODS

Participants and Data Collection

This methodological study used a cross-sectional, computer-assisted survey of lung cancer patients over a 7-day period in 2007. The established patient base of the online NexCura, Inc. patient information resource was used to survey patients with lung cancer. Patients who had previously visited the NexCura website (www.nexcura.com), and had registered,

---

*Division of Hematology and Oncology, Albert Einstein College of Medicine/Jacobi Medical Center, Bronx, NY; †School of Nursing, University of Virginia, Charlottesville, VA; and ‡Fred Hutchinson Cancer Research Center, University of Washington, Seattle, WA.

Disclosure: The authors declare no conflict of interest.

Address for correspondence: Richard J. Gralla, MD, FACP, Professor of Medicine, Albert Einstein College of Medicine, Jacobi Medical Center, Room 3N20, Building 1, 1400 Pelham Parkway South, Bronx, NY 10461. E-mail: rgralla@gmail.com

ISSN: 1556-0864/14/0909-1243

were routinely asked whether it is permissible to contact them in the future. Invitation e-mails were sent to those patients who had lung cancer and who had agreed to allow further contact on registration. The invitation outlined the purpose of the survey, and that it would be conducted anonymously. Those who responded positively were sent the electronic survey. Responses were fully anonymous; no patient identifier was used at any time and participation was elective. Patients with either active disease or a history of lung cancer of any histological type were invited to be included in the survey. Caregivers were excluded from the study. Participants' consent was indicated by each individual's willingness to complete and return the questionnaire. The NexCura website, available only in English, attracted primarily a North American following. Based on this and prior NexCura-based surveys,[6] we estimate that nearly 90% of the respondents were from the United States and Canada. Since the completion of this survey, the ownership and mission of NexCura has evolved. NexCura was initially an independent company, which was then acquired by the media firm Thomson-Reuters Corporation, and is now a subsidiary of McKesson Corporation. As of this writing, the Nexcura website is no longer operational.

Survey Measures

The initial portion of the survey queried the sociodemographic profile and health-related information of patients in ten questions. This included self reporting of age group, time since lung cancer diagnosis, stage at diagnosis, performance status parameters, recurrence since completion of treatment or presence of metastatic lung cancer, type of treatment received, and level of education. To estimate Karnofsky performance status (KPS), patients were asked to choose among categories as given by the straightforward definitions of the original KPS scale. Based on these responses, patients were then placed in the KPS 80–100% group, 60–70% group, or in the < 60% group. To identify the current disease stage, patients were asked to select among the following four options: "the cancer has been completely removed surgically, or is in complete remission (no sign of cancer on radiograph or tests)"; "The cancer is present in my lung or chest but has not spread to other organs of the body beyond the chest or lymph nodes in the chest"; "The cancer is present in other site(s) or organ(s) such as bone, liver, or brain"; or "I do not know." Based on these responses, patients were classified as having "no current evidence of disease", "locally advanced (stage III)" or "metastatic (stage IV)" disease, respectively.

To provide the survey document to send to patients, a panel of 53 oncology professionals who focus on lung cancer (i.e., medical oncologists, thoracic surgeons, radiation oncologists, oncology nurses, and social workers) reviewed the literature and existing PRO/quality of life instruments.[4,5,7,8] Based on this review and their experiences, the panel then selected the items that were felt to be of the greatest importance, to submit to patients for their ranking. The group voted and selected a total of 20 items for the patient survey. The participating patients were also invited to submit items which they felt might supplement the survey. The survey was then sent to the patients who had responded positively to the invitation to participate. These patients ranked each of the 20 quality of life/patient reported outcome issues on a 5-point categorical scale ranging from "not important at all" to "very important". These issues encompassed the physical, functional, psychological, social, and spiritual domains of quality of life.

Statistical Analysis

All statistical analyses were performed using R (Foundation for Statistical Computing, Vienna, Austria).[9] Categorical variables were compared using Pearson's χ^2 tests. A p value of less than 0.05 was considered statistically significant. p values of post hoc paired comparisons after χ^2 tests were adjusted with the Bonferroni method.

RESULTS

Demographic Data

Respondents' demographic profile and cancer characteristics are provided (Table 1). A total of 660 patients completed the survey (297 males, 363 females, median age 62 years). Few patients (5%) were unsure of their histologic type of lung cancer, whereas 508 patients (77%) reported they had non–small-cell lung cancer, and small cell lung cancer was reported by 119 patients (18%). The percentages reported of the lung cancer histologic types largely match the prevalence in the general population. More than half of the patients (60%) had stage ≥III disease. Many patients (88%) reported a performance status ≥60%.

Quality of Life and PRO Questions

As presented in Table 2, only one of the top five factors rated as either "very important" or "important" was a lung cancer symptom (i.e., fatigue, the fifth highest rated item), whereas global issues such as maintaining quality of life (96% of patients) and maintaining independence (95%) were ranked highest. Patients were invited to submit additional issues, but only a minority of patients did so. As a result, it was judged that none of the submitted items was indicated frequently enough to warrant adding an additional item to the survey.

Tables 3–5 present the quality of life/PRO survey findings stratified by gender, performance status, and cancer stage, respectively. There were no survey rating differences by gender among the top 14 ranked items (Table 3). In the lower rated items where differences of more than 5% between men and women were seen, women rated anxiety ($p = 0.04$), faith/spiritual concerns ($p = 0.003$), and issues concerning the meaning of life ($p = 0.009$) somewhat more highly than men.

As presented in Table 4, patients reporting a performance status of 80–100% were more likely to rank the ability to perform normal activities as an important or very important quality of life issue compared with patients with a performance status of 60–70% (Bonferroni-adjusted post hoc paired comparison $p = 0.022$) or patients with a performance status of <60% ($p = 0.027$). In addition, patients in the highest performance status group (80–100%) were more