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ASSESSMENT OF THE QUALITY OF LIFE OF PATIENTS WITH LUNG CANCER IN THE ABAY REGION

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Abstract

Background and Objectives. Lung cancer is the leading cause of cancer-related mortality worldwide. Due to late-stage diagnosis, the five-year survival rate remains as low as 15%. Disease progression, symptom severity, and treatment-related adverse effects significantly diminish the quality of life (QoL) in these patients. The objective of this study was to assess the quality of life in patients with lung cancer.

Materials and Methods. This prospective study was conducted from May to October 2024 in the Abay region of the Republic of Kazakhstan and included 123 patients diagnosed with lung cancer. Patient-reported quality of life and symptom burden were evaluated using the European Organisation for Research and Treatment of Cancer Quality of Life Questionnaire Core 30 (EORTC QLQ-C30), with scores ranging from 0 to 100.

Results. Overall quality of life (mean score > 50) and functional scales (mean score > 50) were moderate to good. The highest mean score was observed for social functioning (94±11.3), followed by physical functioning (79.73±13.3), cognitive functioning (76.15±19.5), emotional functioning (74.08±22.6), and role functioning (67±15.4).

Conclusions. This study highlights the necessity of conducting multicenter research to assess quality of life in larger populations of lung cancer patients. It underscores that patient-reported outcomes regarding quality of life should be considered essential in developing new healthcare strategies aimed at improving medical care, including treatment, rehabilitation, and palliative support for oncology patients.

Keywords: *lung cancer, quality of life, public health, medicine*.

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Резюме

ОЦЕНКА КАЧЕСТВА ЖИЗНИ ПАЦИЕНТОВ С РАКОМ ЛЕГКОГО В АБАЙСКОМ РЕГИОНЕ

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Введение и цель. Рак легких является основной причиной смерти от онкологических заболеваний во всем мире. Из-за поздней диагностики 5-летняя выживаемость составляет всего 15%. Прогрессирование заболевания, тяжесть его симптомов и побочные эффекты значительно снижают качество жизни (КЖ) у этих пациентов. Целью данного исследования была оценка качества у пациентов с раком легких.

Материалы и методы. Проспективное исследование, проводившееся в период с мая по октябрь 2024 года области Абай Республики Казахстан, включало 123 пациента с раком легкого. Качество жизни пациентов и бремя симптомов оценивались с использованием опросника качества жизни Европейской организации по исследованиям и лечению рака (EORTC QLQ C-30) (диапазон значений 0–100).

Результаты. Качество жизни (средний балл> 50) и функциональные измерения (средний балл> 50) были умеренными или хорошими. Самый высокий средний балл был зафиксирован по социальному функционированию 94±11.3 балла, за которым следовали физическое функционирование 79.73±13.3 балла, когнитивное 76.15 ±19.5, эмоциональное 74,08±22.6 и ролевое 67±15.4 функционирование.

Выводы. Исследование подчеркивается необходимость проведения многоцентровых исследований, которые позволят оценить качество жизни в более крупных популяциях пациентов с раком легкого, подчеркивая, что отчеты пациентов о качестве жизни следует считать необходимыми для разработки новых стратегий здравоохранения, которые могли бы повысить уровень предоставляемой медицинской помощи с точки зрения лечения, реабилитации или паллиативной помощи онкологическим больным.

Ключевые слова: *рак легкого, качество жизни, общественное здравоохранение, медицина.*

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Түйіндеме

АБАЙ ӨҢІРІНДЕГІ ӨКПЕ ОБЫРЫ БАР НАУҚАСТАРДЫҢ ӨМІР СҮРУ САПАСЫН БАҒАЛАУ

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Кіріспе және мақсаты. Өкпе обыры бүкіл әлемде онкологиялық аурулардан болатын өлімнің негізгі себебі. Диагноздың кеш қойылуының салдарынан науқастардың өмірінің ұзақттығын 5 жылға арттыру деңгейі тек 15%-ты құрайды. Аурудың асқынуы, оның белгілерінің ауырлығы және емдеуге байланысты теріс жанама әсерлер науқастардың өмір сүру сапасын айтарлықтай төмендетеді. Зерттеудің мақсаты – өкпе обырына душар болған науқастардың өмір сүру сапасын бағалау.

Материалдар мен әдістер. 2024 жылдың мамыр айы мен қазан айы аралығында Қазақстан Республикасы Абай облысында жүргізілген перспективалық зерттеуге өкпе обыры диагнозымен 123 науқас қатысты. Науқастардың өмір сүру сапасы мен симптом ауырлығы Еуропалық онкологиялық зерттеулер және емдеу ұйымының өмір сүру сапасын бағалау сауалнамасы (EORTC QLQ C-30) негізінде бағаланды (бағаның диапазоны 0–100).

Нәтижелер. Өмір сүру сапасы (орташа ұпай > 50) және функциялық көрсеткіштер (орташа ұпай > 50) орташа немесе жақсы деңгейде болған. Ең жоғары орташа ұпай әлеуметтік қызмет бойынша 94 ± 11.3 ұпай, одан кейін физикалық қызмет бойынша – 79.73 ± 13.3, когнитивті қызмет бойынша – 76.15 ± 19.5, эмоционалды – 74.08 ± 22.6 және рөлдік қызмет – 67 ± 15.4 ұпай болды.

Қорытынды. Бұл зерттеу өкпе обыры бар науқастардың ауқымдырақ популяциясындағы өмір сүру сапасын бағалауға мүмкіндік беретін көпорталықты зерттеулер жүргізудің қажеттілігін айқындайды және науқастардың өмір сүру сапасы туралы есептер жаңа денсаулық сақтау стратегияларын әзірлеуде маңызды екенін көрсетеді. Осы стратегиялар онкологиялық аурулары бар науқастарға көрсетілетін медициналық көмектің сапасын емдеу, реабилитация немесе паллиативті көмек салаларында арттыруға бағытталуы тиіс.

Түйінді сөздер: *өкпе обыры, өмір сүру сапасы, қоғамдық денсаулық сақтау, медицина.*

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Introduction

According to the International Agency for Research on Cancer, nearly 20 million new cancer cases and 9.7 million cancer-related deaths were recorded in 2022. Lung cancer was the most commonly diagnosed type, accounting for one in eight cancer cases (12.4%) worldwide. Furthermore, lung cancer remained the leading cause of cancer-related mortality, with an estimated 1.8 million deaths (18.7% of all cases). Among men, lung cancer was the most frequently diagnosed malignancy in 33 countries and the primary cause of cancer-related mortality in 89 countries [1]. Among women, lung cancer was the leading cause of cancer-related death in 23 countries. The one-year survival rate for lung cancer patients, regardless of stage at diagnosis, is approximately 41%, but this rate declines to below 13% over a five-year period [2]. In the Republic of Kazakhstan, breast cancer had the highest incidence in 2022 (13%), followed by lung cancer (10%) and colorectal cancer (9%). However, lung cancer remained the leading cause of cancer-related mortality (16%), followed by gastric cancer (12%), colorectal cancer (11%), and breast cancer (8%) [3].

Patients with lung cancer may experience symptoms specific to their disease process, such as cough or dyspnea, as well as more generalized symptoms, including fatigue and loss of appetite [7,14,17,18,11]. However, significant advancements in lung cancer management have occurred over the past decade, including expanded lung cancer screening, improvements in radiotherapy techniques, and therapeutic innovations. These advancements have likely contributed to a documented reduction in lung cancer mortality [8,14,17,18,11,15].

Given the severe course of lung cancer, oncology specialists should focus not only on disease control but also on optimizing patients' quality of life (QoL). Health-related quality of life (HRQoL) is a multidimensional concept that evaluates the functional impact of a patient's health condition and/or treatment. It encompasses physical, role, emotional, social, cognitive, sexual, and spiritual functioning at an individual level [10,11,23,26,28]. HRQoL data serve as a critical parameter for treatment comparisons, support daily clinical decision-making, enhance communication between patients and physicians, and facilitate clinical and economic evaluations to optimize healthcare resource allocation [12].

Patient-reported HRQoL data help clinicians better understand the toxicity and symptoms experienced by patients, as subjective symptoms such as fatigue and pain are often underestimated [3]. Understanding the patient's experience regarding disease-related symptoms and treatment-associated side effects is crucial for improving clinical outcomes [7,24,10,6,13,25,5,16,21].

The objective of this prospective study was to assess the quality of life in patients with lung cancer.

Materials and Methods.

The study sample comprised all lung cancer patients undergoing treatment at the Public Utility Enterprise on the Right of Economic Management «Center for Nuclear Medicine and Oncology» under the Health Department of the Abay Region, Republic of Kazakhstan, between May and October 2024. Inclusion criteria required patients of both sexes, aged 18 years or older, with a confirmed diagnosis of lung cancer, the ability to communicate in Kazakh or Russian, and adequate cognitive function.

Exclusion criteria included lung cancer patients aged 18–70 who declined participation in the study, as well as individuals with confirmed mental health disorders.

A total of 123 patients met the inclusion criteria. Demographic characteristics and clinical data related to the disease and treatment were obtained from patients and their medical records.

The study was conducted in accordance with the principles of the Declaration of Helsinki and was approved by the Ethics Committee of Semey Medical University (Protocol No. 5, dated December 21, 2023). Written informed consent was obtained from all participants prior to their inclusion in the study.

Quality of Life Assessment

To evaluate quality of life (QoL) and symptom burden, the European Organisation for Research and Treatment of Cancer Quality of Life Questionnaire Core 30 (EORTC QLQ-C30), version 3.0 [4], was administered after obtaining the necessary authorization. The questionnaire was validated in both Kazakh and Russian languages and was completed by patients. It consists of 30 items and includes functional scales (physical, role, emotional, cognitive, and social functioning), symptom scales (fatigue, nausea/vomiting, pain, dyspnea, insomnia, appetite loss, constipation, diarrhea, and financial difficulties), and a global health/overall quality of life scale. Scores for each scale range from 0 to 100. Higher scores on the functional and global health/QoL scales indicate better functioning and higher quality of life, whereas higher scores on the symptom scales reflect greater symptom burden and distress.

Following a brief explanation of the questionnaire's content and instructions for completion, most patients were able to complete it independently. The average time required to complete the questionnaire was 12 minutes.

Statistical Analysis

Means and standard deviations (SD) were used to describe quantitative variables, while absolute (N) and relative (%) frequencies were used for qualitative variables. Pearson's chi-square (χ^2) test or Fisher's exact test, where applicable, was employed for proportion comparisons. Significance levels were two-tailed, with statistical significance set at $p < 0.05$. Statistical analyses were performed using SPSS version 24.0.

Results

According to the EORTC QLQ-C30 scale, all functional domain scores exceeded 50 points among lung cancer patients. The highest mean score was recorded for social functioning (94±11.3), followed by physical functioning (79.73±13.3), cognitive functioning (76.15±19.5), emotional functioning (74.08±22.6), and role functioning (67±15.4).

As shown in Table 1, the social functioning score of 94.0 points is a high result, indicating that patients experience minimal limitations in social activities. They can actively participate in social events and maintain relationships with others. The closer the score is to 100, the fewer restrictions in social functioning. The physical functioning score of 79.73 points reflects a good level of physical ability, suggesting that patients retain high functional capacity with minimal limitations in daily activities. A cognitive functioning score of 76.15 points represents a good level of cognitive resilience. Patients do not experience significant difficulties.

Table 1.

Differences in Functional Scale Scores.

Functional Scales Range 0–100	Index (points) Mean (SD)	Total score for the scale	Maximum value	Minimum value
Physical Functioning	79.73	1201	4	1
Role Functioning	67.0	404	4	1
Emotional Functioning	74.08	893	4	1
Cognitive Functioning	76.15	422	4	1
Social Functioning	94.0	849	4	1

with memory or concentration. The emotional functioning score of 74.08 points suggests a relatively high emotional well-being, though some areas for improvement may exist. The role functioning score of 67.0 points indicates moderate limitations in fulfilling usual roles, such as work or daily responsibilities. A score closer to 100 reflects fewer restrictions, whereas a score approaching 0 signifies significant difficulties in performing role-related tasks.

Table 2 presents data on the symptom scale assessment based on the EORTC QLQ-C30 questionnaire.

Table 2.

Symptom Scale Assessment Based on the EORTC QLQ-C30 Questionnaire.

Symptom Scales	Mean, (SD) Range 0–100	Total score for the scale	Minimum value	Maximum value
Fatigue	48.0	900	3	12
Nausea and vomiting	63.0	380	1	4
Pain	100.0	492	1	4
Dyspnea	51.0	311	1	3
Insomnia	39.83	270	1	3
Appetite loss	37.0	260	1	3
Constipation	28.3	227	1	4
Diarrhea	15.7	181	1	3
Financial difficulties	29.0	230	1	3

The Table 2 symptom score of 48 points indicates a moderate level, where symptoms are noticeable but do not reach a critical threshold. Patients may experience episodes of weakness and lack of energy that affect daily activities. Fatigue is not necessarily constant but may worsen at specific times, such as in the evening or after physical exertion. Physicians should carefully assess associated symptoms, including depression, anxiety, sleep quality, and nutritional status. Adjustments to daily routines, sleep improvements, and dietary modifications may help alleviate fatigue.

The nausea and vomiting score of 63 points corresponds to moderately severe symptoms. Patients frequently experience nausea, while vomiting occurs episodically but has a noticeable impact on well-being. These symptoms may lead to reduced appetite, general deterioration of health, and discomfort. It could be a side effect of chemotherapy, radiation therapy, or medication reactions in oncology patients. Pharmacological interventions, such as antiemetic drugs, may be necessary. The pain symptom score of 100 points indicates the maximum level of pain, signifying severe and persistent pain experienced by patients. Pain significantly affects daily activities and necessitates medical treatment. Patients report intense pain that greatly impairs their quality of life, requiring pharmacological management or additional therapeutic interventions. The dyspnea (shortness of breath) score of 51 points suggests a moderate level of breathing difficulty. Although the symptom is present, it does not reach a critical level. Patients experience breathing difficulties during physical exertion (e.g., climbing stairs, brisk walking, or engaging in active movements). Some individuals may report shortness of breath even with minimal activity. While patients do not typically experience significant dyspnea at rest, they may feel breathlessness when speaking or following mild exertion. Episodes of discomfort during deep inhalation, coughing, or a sensation of incomplete inhalation may also occur. Pulmonary function may be partially impaired due to tumor growth, reduced tissue elasticity, pleural effusion, or metastatic involvement. The insomnia symptom score of 39.83 indicates mild to moderate sleep disturbances among patients with lung cancer. Sleep disruption may be attributed to anxiety, treatment-related side effects, pain, or respiratory issues. The loss of appetite symptom score of 37 suggests a moderate level of severity. Patients may occasionally experience appetite reduction, but not to an extent that it becomes a critical concern or a predominant symptom. The constipation symptom score of 28.3 indicates a low severity. Patients may experience constipation occasionally; however, its frequency and intensity are minimal, and the symptom does not significantly impact daily life. The diarrhea symptom score of 15.7 suggests a low degree of severity. While some patients may occasionally experience diarrhea, this symptom does not substantially affect their quality of life. The financial difficulties score of 29 reflects a low level of financial distress. Most patients in the study did not report severe financial burdens related to their illness.

Discussion

According to our study, all functional measurements on the EORTC QLQ-C30 scale exceeded 50 points among patients with lung cancer. The highest mean score was recorded for social functioning (94 points), followed by physical (79.73 points), cognitive (76.15 points), emotional (74.08 points), and role functioning (67 points). These findings are consistent with the study by *Stylianou C. et al.,* where functional measurements also exceeded 50 points, with the highest scores observed for cognitive, emotional, and physical functioning [27]. However, in the study by *Stylianou C. et al.,* social and role functioning had lower scores compared to cognitive, emotional, and physical functioning [27].

The study by *Miller S.V. et al.* demonstrated that, prior to treatment, relatively low general health status and physical functioning scores (79.2 and 87.3 points, respectively) reflected asthenic manifestations [2]. The symptom scale results from our study were as follows: fatigue (48 points), nausea and vomiting (63 points), pain (100 points), dyspnea (51 points), insomnia (39.83 points), loss of appetite (37 points), constipation (28.3 points), diarrhea (15.7 points), and financial difficulties (29 points).

The study by *Stylianou et al.* reported that patients had an average score of <50 on the EORTC QLQ-C30 symptom scales, with the most pronounced symptoms being insomnia, loss of appetite, and fatigue. The lowest scores

were observed for nausea and vomiting, as well as diarrhea. These findings are consistent with our data, where nausea, vomiting, and diarrhea also had relatively low scores; however, pain and dyspnea were rated significantly higher. Similarly, in the study by *Larsson M. et al.,* among 334 patients with lung cancer, the average symptom score was 27.2, with dyspnea, fatigue, and insomnia being the most prevalent symptoms [22]. According to *Lemonnier I. et al.,* among 230 patients with lung cancer, the lowest scores were observed for diarrhea and nausea and vomiting [20].

Numerous studies report that physical symptoms such as dyspnea, fatigue, pain, and insomnia negatively impact the quality of life in patients with lung cancer, whereas social support and resilience are associated with improved quality of life [14,17,18,11,19]. Therefore, oncology specialists should incorporate not only symptom management but also resilience-building and social support into patient treatment plans. Each study has its limitations, including sample size, data collection methods, and population characteristics, which may affect the results and their comparability. Additionally, due to the non-randomized sampling, it is challenging to generalize the findings, as the lack of randomization does not eliminate the possibility that factors other than treatment may influence quality of life and symptom burden.

Conclusions. The findings of our study demonstrated a generally good health status among lung cancer patients. Despite the presence of various disease- and treatment-related symptoms, pain, appetite loss, and fatigue were the most predominant. Our study highlights the necessity of conducting multicenter studies to assess the quality of life in larger populations of lung cancer patients. Moreover, patient-reported outcomes on quality of life should be considered essential for developing new healthcare strategies aimed at improving the standard of care in terms of treatment, rehabilitation, and palliative care for oncology patients.

Study Limitations: *The single-center nature of the study may limit its generalizability, and the absence of long-term follow-up data restricts the assessment of post-discharge outcomes.*

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