

# The acceptance of illness in lung cancer patients before and after surgical treatment

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A – Study Design  
B – Data Collection  
C – Statistical Analysis  
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## ABSTRACT:

**Summary:** Lung cancer is the most common malignant tumor in the world, as well as one of the cancers with the most fatal prognosis. The acceptance of the disease is the most important element of the adaptive process. The better the illness acceptance, the lower the stress level and the higher the self-esteem, which facilitates the adaptation to the health status.

**Aim:** The aim of this study was to assess the acceptance of the disease in patients before and after lung cancer surgery.

**Materials and methods:** The study was conducted in 2016 at the Center of Oncology in Bydgoszcz and the Kuyavian and Pomeranian Pulmonology Center in Bydgoszcz. The study involved 87 patients who were assessed both before and after lung cancer surgery. Original questionnaire, as well as the Acceptance of Illness Scale, were used.

**Results:** Men accounted for 75% of the probands, 65% of the study population were 50-69 years old. The highest number of patients – 25 (28.7%) had a 5-pack-year history, and the lowest amount of patients – 8 (9.2%) had a 2.5-pack-year history. The level of acceptance of illness before and after surgery differed in 58 persons. In 29, the level of acceptance remained the same, in 45, the level of acceptance decreased, and in 13 – it increased. Before surgery, the mean acceptance of illness score was 26.2 points, and after surgery – 20.89 points. The patients both after and before surgery had acceptance of illness scores regardless of their gender, age, education, place of residence or occupational activity.

**Conclusions:** In more than a half of the patients, the acceptance of illness decreases after surgery and is at an average level. Male patients, patients aged 50-69 years, with primary, middle or vocational education, employed persons show a significantly worse illness acceptance, regardless of their place of residence. Gender, age, education, place of residence, and occupational activity do not influence the acceptance of the disease.

## KEYWORDS:

lung cancer, surgery, acceptance of illness

Lung cancer is the most common malignant tumor in the world, as well as one of the cancers with the most fatal prognosis. More than 1 million people die of lung cancer every year. In Poland, lung cancer is diagnosed annually in 6,000 women and 15,000 men. In 2013, the incidence was 18.5% in men and 8.8% in women. In recent years, the incidence in women has increased significantly, however, it is still 3 times higher in men than in women [1].

Chronic diseases, including cancer, have different course, treatment methods and prognosis. The life of a cancer patient changes, and it is often necessary to reevaluate life goals and give up some dreams. The psychological response to the illness is important for the patient. By the society, cancer is perceived as a threat to life, a source of suffering and accompanying fear [2]. Fear, anger, and depression are the factors lowering the quality of life, and these reactions are usually associated with the prognosis, tumor location and stage, as well as type and stage of treatment [3]. Quality of life is different before and after the treatment. Tumors predisposing to reduced quality of life include consecutively tumors of head and neck, lung, breast, digestive tract, and the most stressful treatment method is surgery (fear of narcosis, results, postoperative pain, amputations, as well as of unsuccessful treatment) [4].

The acceptance of the disease is the most important element of the adaptive process. Everyone reacts differently to the disease, and the better the acceptance, the less negative emotions associated with the diagnosis, treatment and rehabilitation, and the lower the discomfort [5]. The higher the illness acceptance, the lower the stress level and the higher the self-esteem, which facilitates adaptation

to the health status. The disease is a challenge for a human being, and one should face it to cope with it [6].

## AIM OF THE STUDY

The aim of the study was to assess illness acceptance before and after the surgical treatment for lung cancer. Secondary aim was to answer the question whether there is a relationship between gender, age, education, occupational activity, current medical situation (before and after surgery), and acceptance of the disease.

## MATERIAL AND METHODS

The study included 87 patients, aged 30 to 70, before and after the surgical treatment of lung cancer in the Oncology Center named after Professor Franciszek Łukaszczyk in Bydgoszcz and Kuyavian and Pomeranian Pulmonology Center in Bydgoszcz. All patients underwent surgery in 2016. Patients awaiting surgery were evaluated, and 14 to 60 days after the procedure, reevaluated. The first questionnaire was an original questionnaire on sociodemographic data and medical history. The second questionnaire was a standardized Acceptance of Illness Scale, which contains 8 questions regarding the negative perception of a disease. The score assesses the disease acceptance process [7].

The study was fully anonymous. The distribution and collection of questionnaires were conducted by persons outside

the environment of the proband, not aware of their personal data. The probands were informed about the possibility of taking part in the study and instructed on how to complete the questionnaires.

The descriptive analysis included the use of tables showing the number and percentage of responses to questions. Arithmetic mean and standard deviation were also calculated. The correlation between two variables was calculated using the Spearman's rank correlation coefficient. Wilcoxon signed-rank test was also performed as an alternative to the Student's t-test for related variables. Significance level  $p < 0.05$  was assumed.

## RESULTS

### 1. Characteristics of patients

Most of the patients – 66 (75.9%) – were women. The most numerous age group, including 59 patients (66.7%), consisted of persons aged 50-69, the smallest group consisted of 9 patients aged 30-49. Forty-one patients (47.1%) had primary/vocational education. Only 13 patients (14.9%) had higher education. The majority of the patients – 64 (73.6%) – lived in a city. Most of the probands were employed – 57 patients (65.5%) (Tab. 1).

### 2. Medical history

The majority of the patients (48 – 55.2%) reported to a physician within 30 days of the onset of symptoms. The smallest amount of patients (16 – 18.4%) reported to a physician after more than 3 months from the first symptoms. Similarly, the majority of the patients (71 – 81.6%) declared that diagnosis delay after the first visit to a physician was less than 30 days. Only one person (1.1%) declared that the diagnosis delay was longer than 3 months. The highest number of patients – 25 (28.7%) had a 5-pack-year history, and the lowest amount of patients – 8 (9.2%) had a 2.5-pack-year history. Most of the patients (67-77%) were informed on the prognosis before the operation, additional 14 patients received the information after surgery, and 6 patients were not informed on the prognosis at all (Tab. 2).

### 3. Illness acceptance

Before surgery, from among all statements from the Acceptance of Illness Scale, the highest score was obtained at: 'I think that people around me are often embarrassed by my illness' (mean score: 3.85) and 'The illness makes me a burden to my family and friends' (mean score: 3.47). The statements that the patients least agreed with included: 'I have trouble adjusting to the limitations imposed by the illness' (mean score: 3.05) and 'Because of my health status, I am unable to do what I like most' (mean score: 2.99). After surgery, the statements that the patients most agreed with included: 'I think that people around me are embarrassed by my illness' (mean score: 3.55) and 'The illness makes me a burden to my family and friends' (mean score: 2.89). The statements that the patients least agreed with included: 'I have trouble adjusting to the limitations imposed by the illness' (mean score: 2.24) and 'I will never be self-sufficient to the extent that I want to be' (mean score: 2.23) (Tab. 3).

Prior to surgery, 49 patients (56.3%) showed an average acceptance level of the disease, and 12 (13.8%) – low. After surgery, 39 patients (44.8%) revealed an average acceptance level and 10 (13.8%) – high.

Tab. I. Sociodemographical data.

VARIABLE		NO. OF PATIENTS	%
gender	female	21	24,1
	male	66	75,9
age	30-49 years	9	10,3
	50-69 years	58	66,7
	above 70 years	20	23,0
education	primary/vocational	41	47,1
	secondary	33	37,9
	higher	13	14,9
place of residence	countryside	23	26,4
	city	64	73,6
vocational activity	employed	57	65,5
	nie not employed	30	34,5

Tab. II. Medical history data

VARIABLE		NO. OF PATIENTS	%
time from the onset of symptoms to reporting to a physician	< 30 days	48	55,2
	30 days to 3 months	23	26,4
	> 3 months	16	18,4
diagnosis delay after the first visit to a physician	< 30 days	71	81,6
	30 days to 3 months	15	17,2
	> 3 months	1	1,1
pack-years	0	17	19,5
	2,5	8	9,2
	5	25	28,7
	10	20	22,9
	20	17	19,5
information on the prognosis	yes	67*	77,0
	no	20	23,0

\* before surgery

\*\* after surgery

Tab. III. Mean score on the Acceptance of Illness Scale before and after surgery

STATEMENT	BEFORE SURGERY	AFTER SURGERY
	MEAN/SD	MEAN/SD
I have trouble adjusting to the limitations imposed by the illness	3,05/1,1	2,24/1,03
Because of my health status, I am unable to do what I like most	2,99/0,92	2,30/1,02
The illness sometimes makes me feel unnecessary	3,2/1,02	2,63/1,1
My health problems make me more dependent on others than I want to be	3,2/1,06	2,30/1,16
The illness makes me a burden to my family and friends	3,47/1,04	2,89/1,3
My health status makes me feel like an incomplete person	3,3/1,17	2,75/1,28
I will never be self-sufficient to the extent that I want to be	3,15/1,15	2,23/1,16
I think that people around me are often embarrassed by my illness	3,85/1,30	3,55/1,26

In 29 patients, the level of acceptance remained the same, in 49, the level of acceptance decreased, and in 13 – it increased. Before surgery, mean score on the scale of acceptance was 26.2 points (upper average level of acceptance), and after surgery – 20.89 points (lower average level of acceptance) ( $p < 0.001$ ) (Tab. 4).

#### 4. Illness acceptance and selected variables: gender, age, education, vocational activity and place of residence.

Before surgery, the mean score on the Illness Acceptance Scale was 25.48 for women and 26.42 for men. Mean score was postoperatively lower in women ( $p = 0.156$ ) and significantly lower for men ( $p < 0.001$ ). Prior to surgery, persons aged 50-69 had the highest mean acceptance score – 26.22, and persons aged above 70 had the lowest mean score – 25.45. After surgery, persons aged above 70 revealed the highest mean score – 22.5, and persons aged 50-69 had the lowest mean score – 20.33. Mean acceptance score lowered after surgery for all age groups: 30-49 years ( $p = 0.237$ ), 50-69 years ( $p < 0.001$ , significant difference), and above 70 years ( $p = 0.248$ ). Before surgery, patients with secondary education had the highest mean acceptance score – 27.93, and patients with higher education had the lowest mean acceptance score – 23.15. After surgery, patients with higher education had the highest mean acceptance score – 22, and patients with secondary education had the lowest mean acceptance score – 20.48. Mean acceptance score decreased in patients with primary/vocational education ( $p = 0.004$ ), secondary education ( $p < 0.001$ ). The decrease was not significant in patients with higher education level ( $p = 0.753$ ). Before surgery, patients living in the country had higher mean acceptance score (27.17 points) than patients living in cities (25.84 points). After surgery, patients living in the cities showed a higher mean acceptance score (21.52 points) than patients living in the country (19.13 points). Mean acceptance score decreased significantly for both the rural population ( $p = 0.002$ ) and urban population ( $p = 0.007$ ). Before surgery, unemployed persons had higher mean acceptance score (26.75 points) than employed persons (25.13 points). After surgery, employed persons had higher mean acceptance score (22.4 points) than unemployed persons (20.09). Mean acceptance score decreased significantly in employed persons ( $p < 0.001$ ) and not significantly in unemployed persons ( $p = 0.136$ ). In addition, patients both before and after surgery had similar mean acceptance score regardless of gender, age, education, place of residence and vocational activity ( $p > 0.05$ ) (Tab. 5).

## DISCUSSION

In our study, the majority of patients were male, which is consistent with the epidemiology of lung cancer. The typical proband was aged 50-69 years, employed and living in a city. The vast majority of patients were informed about the prognosis of the disease. Communicating information on the illness is difficult and requires great empathy. In 1991, Professor J. Nielubowicz wrote in the 'Polish Medicine Weekly': 'Great is the power of the physician's word, as it gives the opportunity to heal and to teach. Word is needed for a physician to perform his profession like any other tool. Word of a physician that derived from true knowledge and willingness to help the sick has real, effective strength' [8]. In 1960, Scottish Association for Mental Health published data on psychological problems in hospital patients. It was found that the main reason for malaise was the lack of knowledge or information – about the

Tab. IV. Illness acceptance level before and after surgery

Level	BEFORE SURGERY		BEFORE SURGERY		P
	n	%	n	%	
low	12	13,8	38	43,7	<0,001
average	49	56,3	39	44,8	
high	26	29,9	10	11,5	
mean score/SD	26,2/ 6,49		20,89/ 6,44		

Tab. V. Mean score on the Illness Acceptance Scale and selected variables before and after the surgery

VARIABLE		BEFORE SURGERY	AFTER SURGERY	P
		MEAN/SD	MEAN/SD	
gender	female	25,48/ 6,91	21,29/ 6,93	0,157
	male	26,42/ 6,39	20,76/ 6,32	<0,001
	p	0,628	0,519	
age	30-49 years	25,78/ 4,84	20,89/ 8,57	0,237
	50-69 years	26,52/ 6,69	20,33/ 5,93	<0,001
	above 70 years	25,45/ 6,73	22,50/ 6,89	0,248
	p	0,934	0,158	
education	primary/vocational	25,76/ 6,74	20,85/ 6,96	0,004
	secondary	27,94/ 5,24	20,48/ 5,55	<0,001
	higher	23,15/ 7,61	22,00/ 7,19	0,753
	p	0,542	0,400	
place of residence	countryside	27,17/ 5,69	19,13/ 6,06	0,002
	city	25,84/ 6,76	21,52/ 6,5	0,007
	p	0,214	0,076	
vocational activity	employed	26,75/ 6,24	20,09/ 6,27	<0,001
	not employed	25,13/ 6,92	22,40/ 6,58	0,136
	p	0,353	0,244	

disease itself, treatment options and treatment methods that had been used, prognosis, time of recovery and return to work [9].

Time from symptom onset to diagnosis was relatively short. According to the Polish National Health Fund data, average waiting period for a visit at the Oncological Outpatient Clinic in Bydgoszcz is 14-49 days and is several times shorter than waiting time at other specialist clinics [10]. The relatively short diagnosis delay from the first symptoms may improve the treatment outcomes and acceptance of illness. It may be prolonged because of patient-specific factors, diagnostic procedures and the excess of procedures.

The study used a contractual definition of the risk of development of tobacco-dependent diseases – i.e. pack-years. One fourth of the patients had a history of 5 pack-years, and one fifth had a history of more than 10 pack-years. The same percentage of patients had a history of more than 20 pack-years. In the study on 100 patients hospitalized in the Clinical Department of Heart and Vascular Diseases in the Specialist Hospital named after John Paul II in Cracow almost half of the patients were strongly addicted to nicotine, which also correlated with a higher stress level [11]. Despite the significant influence of tobacco smoking on the incidence of

lung cancer and heart diseases, most of the patients continued to smoke after surgery. This is probably associated with high stress levels and the strength of addiction.

Patients with lung cancer require continuous education. Systematic education of patients on, among other, the harmfulness of smoking, prepares them for active participation in the treatment process, leads to aware self-control, reduces the amount of complications, as well as the direct costs of medical care, therefore contributing to better acceptance of the disease.

At the time of the study, almost all of the patients were aware of the fact that tobacco smoking caused lung cancer. However, one third of them had not been aware of that when they started smoking. Probably youth education on the risk of cancer had been insufficient. Had the smokers known the risk of cancer, some of them would probably not have started smoking.

The patients had only a slight problem with embarrassment of their family due to the disease. However, adaptation to the disease and inability to perform activities they enjoyed posed most difficulties to them. Additionally, after surgery, there was a growing concern about their self-sufficiency.

Generally, in almost half of the patients, the acceptance of the disease decreased after surgery and was average. The acceptance of the disease both before and after surgery was not influenced by gender, age, education, vocational activity and place of residence. On the other hand, the acceptance of the disease decreased after surgery in patients that were male, aged 50-69, with primary, vocational and secondary education, in the employed, and both in city and country residents. In other studies on non-oncological patients, it was also shown that older patients had lower acceptance level of the disease [12]. Perhaps it is associated with difficult adaptation of the elderly to the disease. Patients aged over 70 suffer from comorbidities more frequently. The sense of dependence on others also influences the acceptance of an illness. In the elderly, there is a decline in physical activity, and therefore, a need to rely

on others' help is higher, which results in a loss of sense of independence and freedom [13].

After surgery, persons with primary, vocational, and secondary education tended to show lower acceptance of the disease than persons with higher education level. Persons with higher education show the highest level of acceptance of illness [14]. It is probably related to health education courses conducted at universities. The greater the knowledge on a disease, the lower the stress associated with it. Both before and after surgery, rural and urban population showed similar acceptance of illness. However, the acceptance differed significantly before and after the illness for both the populations. The differences may include both the availability of treatment and the availability of support and entertainment.

In a study conducted in 2016 on 36 lung cancer patients, the patients used constructive stress management strategies, mainly the strategy of a fighting spirit and positive reassurance, as well as task-oriented strategy in stressful situations. In our study, similarly to other studies, the patients were in an early stage of the disease, in which the hope for recovery is predominant. The exclusion strategy mostly appears later during the causal treatment. The quality of life of patients underestimating the disease is higher than in patients feeling fear [15].

## CONCLUSIONS

- In more than half of the patients, the acceptance of the disease decreases after surgery and is on an average level.
- Patients that are male, aged 50-59, with primary, vocational or secondary education, persons that are employed show a significantly worse acceptance of the disease, regardless of the place of residence.
- Both before and after surgery, gender, age, education, place of residence, and vocational activity have no influence on the acceptance of the disease.

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