FACTORS RELATED TO DEPRESSION IN NON-SMALL-CELL LUNG CANCER PATIENTS TREATED AT K HOSPITAL DURING 2021 - 2022

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Non-small cell lung cancer is currently the second most common cancer when assessing common cancer and the number of cancer deaths; there are a limited number of studies about depression in lung cancer patients in Vietnam. This cross -sectional descriptive study aimed to describe depression in non-small cell lung cancer patients treated at K Hospital from 2021 – 2022 and associated factors. The study was conducted on 243 NSCLC patients treated at K Tan Trieu Hospital by direct phone call interview and psychiatric clinical examination. We applied the PHQ-9 scale and DSM-5 for screening and confirmed depression, and the SF-12 scale was applied for quality of life measurement. The study found that stage IV disease increased the risk of depression more than 6 times in lung cancer patients (OR = 6.47; p<0.05) and patients with poor QoL in the depression group, in which quality of life of mental health (36.94 ± 5.43) and physical health (41.78 ± 7.17) were all lower than those in the group without depression. Measures to monitor mental health, screen for early detection and treatment interventions, and improve quality of life are the top priorities to reduce the risk of depression in patients with non-small cell lung cancer.

Keywords: Depression status, associated factors, non-small cell lung cancer.

I. INTRODUCTION

The incidence and mortality from cancer is accelerating worldwide. According to the GLOBOCAN 2020 report, Vietnam ranks 91/185 in terms of new incidence and 50/185 in terms of mortality rate per 100,000 people. In addition, lung cancer is currently the 2nd most common cancer worldwide when assessing common cancers and the number of cancer deaths.[1]

Cancer has a long and complicated therapeutic process with high treatment costs. Moreover, when it reaches advanced stages, the patient suffers not only physical pain but also a hefty psychological impact. The most common psychological traumas among cancer patients include stress, anxiety, and depression.[2] Patients who did not undergo surgery or receive radiation therapy, young, or had terminal cancer were more likely to develop depression.[3] Depression also affects the effectiveness of treatment and the patient's quality of life. [4]

To provide data for health authorities in assessing the status and early identification of signs of depression in cancer patients. From there, timely intervention and treatment measures should be developed. This has important implications for patients during lung cancer treatment.

To contribute to improving the quality of medical services and quality of life for patients, we carried out this study with the following objective: To analyze factors associated

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with depression in non-small cell lung cancer patients treated at K Hospital from 2021 - 2022.

II. METHODS

1. Study Design and Setting

The study was conducted on NSCLC patients being treated at K Hospital in 2021-2022 by a cross-sectional descriptive study. The study period was from 09/2021 to 09/2022 at K Hospital, Tan Trieu Campus, Hanoi.

2. Recruitment

To enroll as many participants as possible, the inclusion criteria were age from 18 to 65 years who had confirmed non-small cell lung cancer diagnosis by pathology and did not have a medical history of communication problems.

3. Questionnaire

Using the PHQ-9 depression screening scale, psychiatrists used the PHQ-9 and DSM-5 to classify depressed patients, and the SF-12 quality of life scale was used to interview subjects who met the criteria and agreed to participate.

4. Data Collection and Variables

The sample size selected for the study is calculated according to the formula for estimating the sample size for a proportion in the population:

$$N = \frac{Z^2_{1-\alpha/2} \cdot P.(1 - P)}{d^2}$$

In fact, 243 people were recruited to participate in the study.

5. Objective variables

Relevant factors were determined by the relationship between depression and the factors below according to the DSM-5:

Personal factors: Age, Gender, Living, Marital status.

Social factors: Education level, Job, Health insurance.

Cancer factors: Disease stages, Time of diagnosis, Treatment methods

The impact of cancer diagnosis: PHQ scale (4-point Likert), DSM-5 Diagnosis (9 symptoms present during the same 2-week period), and SF-12 (total score of the 12-item QoL questionnaire)

6. Data management and analysis

Information was collected directly on the questionnaires of study subjects that had been built with a set of questions. Data were entered and monitored by Excel and processed using SPSS version 20.0 software. Data entry, SPSS statistical analysis of mean, median, and standard deviation. The study used $p<0.05$, 95% confidence interval.

7. Ethical considerations

The study was explained, and participants volunteered. Patients had the right to withdraw from the study at any time. Ensure that the patient information were kept confidential, except where it involved suicidal or homicidal ideation. Patients with severe depression at risk of suicide or behavioral disorders would be referred to a psychiatrist for treatment. Descriptive study on depression group psychology, unrelated to cancer treatment. All patient and treatment data were confidential and just used for research. Science Council approved VCART research, Cancer Research Institute, K Hospital. Council Decision No. 528/ Decision - Preventive Medicine & Public Health, 29/12/2022, School of Preventive Medicine and Public Health, approved the baseline topic.

III. RESULTS

Table 1. The relationship between demographic data and depression in DSM-5

Characteristics	No depression		Depression		COR (95%CI)
	n	%	n	%	
Gender					
Male	149	68.7	15	57.7	1.6 (0.7 – 3.7)**
Female	68	31.3	11	42.3	
Age (years)					
< 60	139	64.1	17	65.4	0.94 (0.40 – 2.22)**
≥ 60	78	35.9	9	34.6	
Education levels					
< High school	182	83.9	22	84.6	0.95 (0.31 – 2.91)**
≥ High school	35	16.1	4	15.4	
Marital status					
Single	1	0.5	0	0	-
Married	214	98.6	26	10.7	-
Separation/Divorce	2	0.9	0	0	-
Widow	0	0	0	0	-
Health insurance					
Yes	214	98.6	26	100	-
No	3	1.4	0	0	
Total (n = 243)	217	100	26	100	

*, p<0.05; **, p<0.10; COR, Crude Odds Ratio; The P values is based on t test

Table 1 shows that there were 17 study participants in the depression group; those under 60 years old accounted for 65.4% of the cases, while those over 60 years old accounted for 34.6% of the cases.

In a total of 26 patients with depression, 84.6% had a low school diploma, while 15.4% had a high school diploma or higher. All patients with depression confirmed by the DSM-5 were married, accounting for 10.7%. There was no relationship between gender, age, education levels, marital status, health insurance and depression (p > 0.05).

Table 2. Factors Associated with Disease and DSM-5

	No depression		Depression		AOR (95%CI)
	n	%	n	%	
Disease stages					
I – III	118	54.4	4	15.4	6.47 (2.14 – 19.62)*
IV	99	45.6	22	84.6	
Treatments					
Surgery	19	8.8	2	7.7	0.56 (0.06 – 4.82)**
Radiotherapy	45	20.7	3	11.5	0.66 (0.25 – 1.77)**
Chemotherapy	53	24.4	10	38.5	1.05 (0.60 – 1.85)**
Target treatment	86	39.6	9	34.6	0.92 (0.6 – 1.41)**
Total (n = 243)	217	100	26	100	

*, p<0.05; **, p<0.10; AOR, Adjusted Odds Ratio; The P values is based on t test

Table 2 shows that stage IV increased the risk of depression in the DSM-5 by more than 6 times in lung cancer patients (OR = 6.47; p<0.05). The majority of participants had stage IV disease, with depression accounting for 84.6%. The difference between depression in the DSM-5 and disease stages was statistically significant, and no relevant factors were found in treatments and depression in the DSM-5.

Table 3. The relationship between QoL (SF-12) characteristics and depression of the patients in the DSM-5

Variable	No depression	Depression	Total (n = 243)
Physical activity	51.64 ± 8.38	39.95 ± 12.84	50.39 ± 9.63
Role disorder due to physical health problem	28.18 ± 3.15	23.16 ± 4.14	27.64 ± 3.61
Feeling body pain	53.59 ± 6.39	42.16 ± 11.97	52.37 ± 7.99
General health	37.81 ± 8.95	29.07 ± 8.28	36.88 ± 9.27
Vitality	36.97 ± 11.44	33.07 ± 10.27	36.57 ± 11.36
Social activities	54.47 ± 6.13	48.02 ± 11.31	53.78 ± 7.13
Limited role due to emotional problems	21.68 ± 2.47	15.86 ± 5.48	21.06 ± 3.61
Mental health	51.4 ± 6.12	38.72 ± 7.63	49.39 ± 7.87
Life quality of physical health	43.11 ± 5.94	34.51 ± 9.02	41.78 ± 7.17
Life quality of mental health	38.2 ± 4.42	30.06 ± 5.41	36.94 ± 5.43

Table 3 shows that there were large differences in SF12 scores among the quality of life aspects of the depression group compared with the no depression group. Patients with poor QoL quality in the depression group, in which quality of life of mental health (36.94 ± 5.43) and physical health (41.78 ± 7.17) by SF12 were all lower than the group without depression.

Table 4. The difference between QoL (SF-12) characteristics and depression of the patient in DSM-5

Variable	COR (95%CI)
Physical activity	0.91 (0.88 – 0.94)*
Role disorder due to physical health problem	0.74 (0.67 – 0.82)*
Feeling body pain	0.87 (0.83 – 0.92)*
General health	0.86 (0.80 – 0.93)*
Vitality	0.96 (0.92 – 1.01)**
Social activities	0.92 (0.89 – 0.96)*
Limited role due to emotional problems	0.75 (0.69 – 0.82)*
Mental health	0.75 (0.66 – 0.86)*
Life quality of physical health	0.85 (0.78 – 0.92)*
Life quality of mental health	0.65 (0.53 – 0.80)*

QoL: Quality of life; *, p<0.05; **, p<0.10; COR, Crude Odds Ratio; The P-values are based on t-tests

*, p<0.05; **, p<0.10; COR, Crude Odds Ratio; The P-values are based on t-tests

According to the results of the SF-12 score in Table 3, Table 4 presents the factors associated with depression in NSCLC patients according to the DSM-5 through the QoL characteristics analyzed. Patients with low-quality mental health had a higher risk of developing depression than the other group. Our study found that the difference was statistically significant in most groups (p<0.05).

IV. DISCUSSION

Individuals over 50 years of age and singles were more likely to develop depression.[5] This study had a lower rate of depression in lung cancer patients than Yu Lee and Pao-Yen Lin's study of 104 patients at Chang Gung Hospital in Taiwan (25%). The Yu Lee and Pao-Yen Lin study included small-cell lung cancer patients, who have a worse prognosis and disease mechanism. Inflammatory cytokines increase depression risk.[6] The above factors were also demonstrated in the study of Shahedah KK et al., who showed that those who were married or had a partner had an average depression score of 9.42 lower than those who were single/widowed/never married/divorced.[7]

Otherwise, our study found 26 depressed non-small cell lung cancer patients with associated factors. A total of 65.4% of individuals under 60 years of age had depression. This supported a Taiwanese study by Yu Lee and Pao-Yen Lin that found that depression was more common

in young lung cancer patients.[6] The rate of depression in NSCLC patients was much higher in men than in women, which could be explained by the number of lung cancer cases predominating in men, which was consistent with many other studies.[8,9] Otherwise, young cancer patients with little life stability may be more emotionally affected than middle-aged and elderly patients.[10] Educational level was below high school (84.6%). Due to their limited awareness and coping skills, less educated cancer patients may have more psychological issues. The study also found no statistically significant correlation between gender, age, and education and patient depression rates.

In our study, stage IV lung cancer patients had a 6.47-fold higher risk of depression (OR = 6.47; p<0.05). Late-informed patients often have more psychological stress, more severe physical symptoms, and a greater impact on life due to illness, increasing their risk of depression. Depression may reduce cancer treatment adherence.[11] This suggested that advanced-stage NSCLC patients, whether cause or effect, may contribute to depression and low QoL. Hence, clinicians should pay attention to early screening and support mental health care of patients with non-small cell lung cancer.

The analysis showed that depressed patients had a much lower quality of life than nondepressed patients. Through the analysis, patients with depression had poor QoL in physical, emotional, and general health, especially mental health (36.94 ± 5.43), compared to the group without depression (41.78 ± 7.17), which was statistically significant in most groups. Yu Lee and Pao-Yen Lin found a similar decrease in quality of life in lung cancer patients with depression compared to those without depression.[6] This result was consistent with the studies of Prapa Paraskevi et al. and Ostroff Jamie et al., the disease and therapy-related adverse effects might lead to poor quality of life (QoL) and increased psychological distress.[12, 13] Depression was independently associated with poor prognosis, treatment adherence, and QoL. [14, 15] These findings support the clinical approach and improve QoL in NSCLC patients.

V. CONCLUSION

No relevant factors were found in the characteristics of gender, age, living, education level, marital status and health insurance. The difference between depression in the DSM-5 and disease stages was statistically significant at p<0.05, and patients with stage IV disease had a more than 6-fold increased risk of depression in the DSM-5 in lung cancer patients (OR = 6.47; p<0.05). The difference was statistically significant in most groups for quality of life characteristics (p<0.05). In particular, patients with low quality of mental health had a higher risk of depression than the other group.

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