

Examining Anxiety Caused by COVID-19 Pandemic Among Lung Cancer Patients

Abstract

Lung cancer is the most prevalent cancer in Markazi province. Anxiety could lessen the patients' immune system rendering them more susceptible to illnesses like COVID-19. As lung cancer patients are vulnerable to contracting COVID-19 because of using various drugs (corticosteroids and other immunosuppressant drugs), it is essential to provide correct information on infection prevention approaches to these patients. This cross-sectional analytical study was performed in 2021 on 87 lung cancer patients in Markazi Province, with the demographic information questionnaire and the coronavirus anxiety scale questionnaire as data collection tools. The scoring spectrum was 0-54. Data analysis was conducted in SPSS 23 using a t-test and ANOVA or its non-parametric equivalent. A p-value less than 0.05 was deemed noteworthy. It was found that 37.55% of the patients had anxiety and 41.5%, were anxious in the mental and 34.5% in the physical aspects. Moreover, it was found that women, especially housewives, experience more anxiety, particularly in the psychological aspect. Furthermore, it was found that patients with at least one history of infection or a positive history of COVID-19 in the family indicated a level of overall anxiety and more anxiety in the psychological aspect. The patients under examination had an average age of 52.6 years, indicating that the older the patients were, the less anxious they were.

Keywords: Anxiety, lung cancer, COVID-19, Arak University of Medical Sciences

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Introduction

The World Health Organization (WHO) declared an epidemic of pneumonia on January 12, 2020, that was caused by the new coronavirus in Wuhan, China, which had begun in December 2019 (1) with different countries around the world grappling with this disease.

Community health emergencies like the COVID-19 pandemic are stressful for community members. Fear and anxiety about the disease could result in stigma in the community, which could lead to harm to oneself or others. Isolation, refusal of social contact, leaving educational, occupational, and health care activities, or even physical violence are its outcomes (2).

In a crisis, the people involved acquire, analyze, and act on information in various ways compared to non-crisis situations. There is a possibility of information loss in extreme stress and information saturation. During a crisis, people may manifest various emotions. Fear, anxiety, and confusion are emotional symptoms in crisis conditions (4).

Cancer refers to a type of disease where cells abnormally multiply and without control. Lung cancer is the uncontrolled growth of abnormal cells that affects different areas of the lung. This type of cancer is among the most prevalent cancers among men worldwide. It ranks second in terms of mortality after stomach cancer. In recent years, the incidence of death because of this cancer has been increasing in the world, with only 13% of lung cancer patients surviving 5 years after diagnosis (6).

Cancer alters the patient's normal life process creating a feeling of fear and anxiety in them, where psychotherapy can return

the person to a normal life. The diagnosis of cancer, and the aggressive and long-term presentation of this disease, in many cases, deprives the patient of the ability to enjoy life (7-8). Based on studies, the most frequent psychiatric disorder in these patients is adjustment disorder - like adjustment with anxiety mixed with depression (9).

Cancer has remained the main life-threatening disease during the COVID-19 pandemic, which needs more attention and psychological care. Breast cancer patients, people under 65, and these factors with therapeutic intent are associated with a higher level of anxiety (17).

It is necessary to provide correct information about infection prevention methods in these patients as lung cancer patients are at risk of contracting COVID-19 because of using various drugs (corticosteroids and other immunosuppressant drugs). On the other hand, receiving wrong information from different sources could lead to anxiety in these people and lead to wrong health behaviors, arbitrary discontinuation of medication because of fear of illness, and mental and physical complications because of anxiety and depression.

Proper training by the media and the members of the healthcare system is critical. The results of Brug (2003) on the Sars pandemic reveal that the Sars pandemic did not cause fear and anxiety in Dutch society because of proper education and the increase in awareness because of education. The training was carried out using television and newspapers, and no cases of SARS had been seen in Holland (6).

The COVID-19, source is a virus called SARS-COV-2, it started at the end of 2019, and its global spread as a pandemic has led to panic among the general public (1-3). The consequences of the disease outbreak have influenced every element of life for humans (4). In addition to endangering a person's physical health, the illness also has an impact on mental health, particularly with regard to emotions and cognition. Several ideas indicate that following the COVID-19 revelation (5), people displayed fewer good emotions (happiness) and more negative emotions (anxiety, depression, and rage) in an attempt to defend themselves (6-7). Therefore, psychological interventions are required when infectious illness epidemics occur that have high death rates (8). This type of disaster frequently results in psychological reactions such as fear and distress (9). Public health emergencies set off a chain reaction of emotional reactions that include elevated anxiety and other unpleasant feelings (10–11). Therefore, it's critical to comprehend any potential psychological effects of COVID-19 as soon as possible. Since emotional and cognitive alterations brought on by public health emergencies may be immediately observed in psychology (12-7-6), persistently unfavorable emotions may compromise immune system performance and upset the equilibrium of their natural physiological processes (13). Anxiety-related symptoms increase in a widespread infectious disease. Like the psychological burden due to SARS, the studies on the psychological effects of prior worldwide health crises have revealed an obvious connection between anxieties associated with the pandemic and elevated anxiety signs - anxiety - contamination concerns - health anxiety - post-incident stress (18 14). COVID-19 is an infectious illness that attacks the body's respiratory system. It seems that those who suffer from non-communicable illnesses (cancer, respiratory disorders, diabetes, and cardiovascular disease) are more susceptible to this virus and run the risk of being very sick (19). Cancer patients are more prone to infection than people without cancer because these people are exposed to systemic immunosuppression caused by malignancy and anti-cancer treatment such as chemotherapy with surgery (20-23). Breast cancer is the most prevalent cancer among women worldwide (24). Patients with cancer are more vulnerable to infection than those without, malignancy and anti-cancer drugs lead to suppression of the immune system (25). According to studies of SARS-COV-2, cancer patients have worse outcomes than other people without cancer (25). In Wang et al. (2020), in the overall population of China during the outbreak of the new coronavirus epidemic in China, 16.5% of the general population experienced signs of depression, 28.8% experienced signs of anxiety and 8.1% experienced signs of tension (26).

In a paper by Ahmad Rostagarian et al. (2021), entitled The Level of Anxiety Caused by COVID-19 in patients with

multiple sclerosis (MS), in a prevalence analysis in Jahrom in 2020, all patients with definite MS were included in the investigation. The average total anxiety index in these patients during the COVID-19 pandemic in Jahrom was 8 out of 54, the average number of psychological symptoms was 6.4, and the mean score of physical symptoms was 1.7 out of 27. Finally, it was concluded that MS patients In Jahrom have a good condition that showed the low effect of pandemic conditions on MS patients (15).

In Kohei Fujita et al. (2020) in Japan, the findings indicated that oncologists must take into account that cancer patients are more anxious than expected in unprecedented conditions like the COVID-19 pandemic (16).

Cancer patients are concerned about COVID-19 and its effect on their health. Uncertainty about the continuation of treatment because of the spread of the coronavirus for newly diagnosed patients, especially for those who had just started their treatment with chemotherapy, is stressful (27). Thus, anxiety is very important in these people now (28). On the other hand, the findings of some studies indicate that women are highly at risk for stress and probably react more to post-traumatic stress disorder (29). People usually undergo various levels of anxiety after a breast cancer diagnosis that could have harmful effects on their mental health (30). Thus, an efficient health and treatment system must help them control the negative psychological effects of problems of that kind by evaluating the anxiety of corona in these people. Given the global situation of the COVID-19 pandemic, which is affecting almost all of the world's significant economic, political, social, and even military aspects and thus paralyzing them, the psychological impacts of this transmissible illness on the mental state of people in different stages of society are critical. Given the pathogenic character of this virus, the speed with which it spreads, and the rate of fatalities due to it, the sickness has the potential to damage the mental health of individuals at all stages of society. As a result, it is vital to identify persons at all stages of society who are vulnerable to psychological problems and whose mental health may be jeopardized under the current high-risk condition, so that these people's mental health may be preserved using appropriate psychological treatments and techniques.

The study will be performed to examine the extent of anxiety induced by the COVID-19 epidemic in patients with lung cancer so that a suitable treatment plan is considered for such patients at these times besides measuring the level of anxiety in patients to provide policies and strategies to reduce anxiety among these patients.

Materials and method:

The study was descriptive-cross-sectional, conducted in 2021 in patients with lung cancer admitted to Ayatollah Khansari Hospital in Arak. All lung cancer patients who met the

conditions to enter the study were selected completely randomly. The inclusion and exclusion criteria were as follows:

Inclusion criteria:

- 1- All lung cancer patients diagnosed with lung cancer by a pathologist
- 2- Having given informed consent to take part in the investigation
- 3- Being treated for lung cancer (outpatient and inpatient)
- 4- Not registered in the medical records of patients suffering from psychiatric disorders
- 5- Not using anti-anxiety medication for at least one month
- 6- The samples not infected by COVID-19

Exclusion criteria:

1- Unwillingness to cooperate

Given the registration of 117 samples in the data registry system of lung cancer patients of Arak University of Medical Sciences and to figure out the required sample size at the certainty level, 95% test power is 80%, and assuming a 5% sample loss, the final sample size was calculated as 87 people. Lung cancer patients with medical records and who regularly visit the clinic of Khansari Hospital were randomly selected and the anxiety questionnaire about COVID was completed.

Introducing the tool:

The Corona Disease Anxiety Scale (CDAS) is a scale that has been developed and validated to assess the anxiety induced by the development of the coronavirus in Iran. The tool's final version has 18 elements and two components (factors). Items 1–9 assess mental symptoms, whereas items 10–18 assess physical symptoms. The tool is graded on a four-point Likert scale (never = 0, occasionally = 1, most of the time = 2, and always = 3). Questionnaires incompletely completed were excluded from the study and replaced by another sample. The CDAS questionnaire was used to measure the anxiety caused by the spread of the coronavirus in Iran. The validity and reliability of the study were conducted by Alipour et al. (2020) (31). The final edition of the tool has 18 elements and two-factor sections. Items 1–9 assess psychological signs, while items 10–18 assess bodily problems. The instrument was graded on a four-point Likert scale (never = 0; occasionally = 1; most of the time = 2; always = 3). Therefore, the greatest and smallest ratings obtained by respondents in this questionnaire are 0-54. People with higher questionnaire ratings have a greater amount of anxiety. Cronbach's alpha was used to assess the tool's reliability for the first factor ($\alpha=879\%$), the second factor ($\alpha=861\%$), and the overall questionnaire ($\alpha=919\%$). Five expert experts in psychology were given the

questionnaires to assess their content authenticity. These individuals reviewed the conceptuality of the items if the questionnaire covered all elements of the issue and the look of the questionnaire; 18 items were accepted out of a total of 23 (31).

CDAS: The test was developed and validated to assess the anxiety generated by the spread of the coronavirus in Iran. The tool's final version has 18 elements and 2 components (factors). Items 1 through 9 assess mental symptoms, whereas items 10 through 18 assess physical problems. The instrument is graded on a 4-point Likert scale (never = 0, sometimes = 1, most of the time = 2, and always = 3). As a result, the greatest and smallest scores received by respondents in this questionnaire are 0-54. High questionnaire scores indicate a higher level of anxiety in people. The reliability of this instrument was determined using Cronbach's alpha technique for the first factor ($\alpha=879\%$), the second factor ($\alpha=861\%$), and the overall questionnaire ($\alpha=919\%$). Moreover, Gottman's $\lambda-2$ values were as follows: for the first element ($\lambda-2=0.882$), the second element ($\lambda-2=0.864$), and the overall questionnaire ($\lambda-2=0.922$). It was utilized to correlate this tool with the GHQ-28 questionnaire to test the accuracy of the correlation with the criteria of this questionnaire, and the results suggested the Corona anxiety questionnaire. The overall score of the GHQ-28 questionnaire and the anxiety element, physical signs, impairment in social relationships, and depression, respectively, are 0.483, 0.507, 0.418, 0.333, and 0.269, with all coefficients significant at the 0.01 level (20).

The data collected was coded and analyzed in SPSS 24. For quantitative, central, and dispersion indices (mean and standard deviation), qualitative data of frequency were used to reach the results. Significance tests for qualitative data are the chi-square test, comparison of means using paired and independent t-tests, and Wilcoxon and Mann-Whitney U test in case of non-parametric test. The rate of first-type error in the study was 5%.

Results

The study entailed 87 cancer patients. The average age was 52.65 ± 9.99 years, and the goal was to assess the amount of anxiety induced by the Corona outbreak in lung cancer patients at Arak University of Medical Sciences in 2021.

The majority of people, 76.1%, were males, 85% were single, 63% were employed, 23% had middle school education, 88% of people had done chemotherapy, 65% had a history of Corona and 75% had a history of coronavirus in the family, 83% had been hospitalized and 78% had less than one year of infection and the mean age (years) was 52.65 ± 9.99 (Table 1).

Table 1. Frequency distribution of the demographic characteristics of the participants in the study

Demographic characteristics	Female	Percentage	Frequency
Gender		24.1	21

Marital status	Male	75.9	66
	Single	85.1	74
Job	Married	4.6	4
	Without a spouse	10.3	9
	Unemployed	14.9	13
	Employed	63.2	55
Education	Housewife	21.8	19
	Illiterate	23	20
	Middle school	33.3	29
	High school	20.7	18
Chemotherapy	University	23	20
	Yes	88.5	77
History of corona infection	No	11.5	10
	Yes	65.5	57
Family history of corona	No	34.5	30
	Yes	72.4	63
Being treated	No	27.6	24
	Inpatient	82.8	72
Duration of infection	Outpatient	17.2	15
	Less than a year	78.2	68
	More than a year	21.8	19
Age		SD	Mean
		9.99	52.65

The mean anxiety score as a raw score in mental aspect anxiety was 11.22±5.16 and as a percentage was 41.59±19.15. Physical aspect anxiety as a raw score was 9.04±4.48 and as a

percentage 33.50±16.62 and total anxiety as a raw score was 20.27±8.73 and as a percentage, it is 37.54±16.18 (Table 2).

Table 2. The mean score of the anxiety questionnaire and its aspects during the COVID-19 pandemic

	Min.	Max.	mean±std	Per
Psychological aspect anxiety	0	27	16.5 ±22.11	41.59±19.15
Physical anxiety	0	20	9.04 ± 4.48	33.50±16.62
Total anxiety score	0	42	20.27 ± 8.73	37.54±16.18

The findings indicate that there are analytically substantial variances between the mean of the psychological and total aspects with gender, occupation, and chemotherapy (p-v < 0.050). Moreover, based on the paired t-test, and according to the independent t-test of the one-side analysis of diversity,

there is a statistically substantial difference in the history of the coronavirus and the history of coronavirus in the family in the mental aspect, physical aspect, and total anxiety. (p-v<0.050) (Table 3).

Table 3. Comparison of the mean anxiety score and its aspects during the COVID-19 pandemic

		Psychological aspect	Physical aspect	Total
Gender	Female	13.42±4.04	10.28±4.12	23.71±7.34
	Male	10.53±5.32	8.65±4.55	19.18±8.90
p-value		0.01	0.19	0.031
Marital status	Single	11.01±5.03	8.86±4.37	19.87±8.4
	Married	12.75±5.05	9±1.63	21.75±5.6
	Without a spouse	12.33±6.65	10.55±6.14	22.88±12.33

p-value		0.64	0.57	0.59
Job	Unemployed	7.84±4.81	11.38±5.29	13.10±4.04
	Employed	7.30±4.13	9.01±4.55	10.31±4.33
	Housewife	15.15±8.01	20.40±8.8	23.42±7.66
p-value		0.016	0.17	0.029
Education	Middle school	9.65±3.40	7.40±3.40	17.05±7.07
	High school	10.34±4.78	8.75±4.23	19.10±7.88
	University	12.72±6.24	10.61±5.55	23.33±10.70
	Middle school	12.75±4.90	9.70±4.44	22.45±8.62
p-value		0.11	0.14	0.08
Chemotherapy	Yes	11.27±5.20	9.06±4.31	20.33±8.56
	No	10.90±5.21	8.90±5.93	19.80±10.50
p-value		0.83	0.91	0.85
History of corona infection	Yes	12.03±4.27	10.01±4.17	22.05±7.50
	No	9.07±6.35	7.20±4.54	16.90±9.98
p-value		0.045	0.005	0.008
History of family corona infection	Yes	12.14±4.52	10.07±4.04	22.22±7.49
	No	8.83±6.05	6.33±4.52	15.16±9.82
p-value		0.007	0.001	0.001
Treated	Inpatient	10.81±5.08	8.79±4.5	19.61±8.70
	Outpatient	13.20±5.29	10.26±4.06	23.46±8.45
p-value		0.10	0.24	0.12
Duration of infection (years)	Less than a year	11.26±5.37	9.07±4.57	20.33±8.98
	More than a year	11.10±4.52	8.97±4.26	20.05±8.00
p-value		0.90	0.91	0.90

The findings indicate that the total score of anxiety has an inverse and statistically significant relationship with age ($r=-24\%$, $p>0.050$), and the psychological aspect of anxiety has an inverse and statistically significant relationship with age.

($r=-26\%$, $p-v 0.050$). Age has a significant inverse relationship with the total anxiety score, and total anxiety decreases with an increase in age. (Table 4).

Table 4. Correlation between the age of the people affected and the anxiety score and its aspects during the COVID-19 pandemic

	Psychological aspect anxiety	Physical anxiety	Total anxiety score
Correlation	-26%	-16%	-24%
p-v	0.013	0.13	0.025

Discussion:

This descriptive study, conducted to determine the level of anxiety in the mental and physical aspects of 87 patients with lung cancer, showed that 37.55 patients had anxiety, 41.5% of the patients were anxious in the mental aspect, and 34.5% in the physical aspect. Moreover, it was shown that women, especially housewives, had more anxiety, especially in the

psychological aspect. It was also found that patients with at least one case history of infection or had a positive history of COVID-19 in the family had a level of overall anxiety and more anxiety in the psychological aspect. The average age of the patients studied was 52.6 years, and it was shown that the older the patients were, the lower their degree of anxiety was.

In many studies, the level of anxiety due to COVID-19 both in the mental and physical aspects and in the total score of anxiety was higher than in our study. In a cross-sectional study of 3029 Iranian adults selected using convenient sampling from May 9, 2020, and June 3, 2020, the level of anxiety was much higher (21).

Moreover, in another study, more than 60% of mothers with young children showed anxiety symptoms (22).

In another study, the findings indicated that 82.4% of bodybuilding athletes had mild to severe anxiety about coronavirus disease (23).

In another study, the mean score of anxiety caused by the COVID-19 virus in breast cancer patients was higher than the patients in our study, both in physical and psychological aspects, as well as in the total score (24).

The tentative reasons for these contradictions are generally the anxiety measurement tools. Furthermore, the selected groups affect the results, as the life expectancy of patients with lung cancer is much lower, which itself reduces worry and anxiety from other issues. On the other hand, the research time has a significant effect on the intensity and mean score of anxiety, since a gradual loss of sensitivity will occur with the prolongation of this pandemic and the experience of its multiple waves.

Women, especially housewives, underwent more anxiety in the study. People who are isolated at home experience mental tension and loneliness due to a lack of room for physical exercise, stress from limited social connections, and anxiety from the worry of infecting family members [25]. In England and Austria, Pieh et al estimated the perceived stress score of housewives as mild to severe [26]. During the COVID-19 epidemic, Kamal and Othman documented a significant level of stress in the overall Iraqi society, with greater levels of stress among people with higher education [27]. In Iran, Jahanbakhshi et al. reported that the degree of psychological suffering among Iranian adults during COVID-19 was greater than that of Chinese [28]. In other investigations, one month after the COVID-19 pandemic, acute post-traumatic stress disorder was identified in both directly involved and non-involved cities in China, with the illness frequency ranging from 7% to 46% [29, 30]. This shows that being separated from others could result in negative emotions [31]. In the majority of the studies evaluated, a large percentage of the general population (97%) expressed worry about the spread of COVID-19, and 98% experienced modest interruptions in everyday life [32]. However, in the COVID-19 pandemic in Chinese society, adopting methods such as accurate updating of health information, particularly on the number of recovered patients, was associated with low levels of stress. Additional information on treatments or vaccines, methods of transmission, and updates on the number of infected patients

and location (e.g., real-time, online tracking map) were also related to decreased anxiety levels [33]. This is an important consideration for those responsible for planning the prevention and treatment of the crisis at the community level.

Another study found that women experience higher stress than men. The majority of the internal and external research evaluated found that women were more prone to psychological problems such as stress, anxiety, and depression [34–36], which is consistent with the findings of the current study. According to the research, the higher frequency of mental problems in women compared to men may be due to women's lower social engagement, biological variables, and environmental stress [37].

Consistent with our results, several studies have shown that younger age groups such as students were more exposed to widespread anxiety and psychological distress [38]. In India, during a study by Vidya Adhara et al., 19% of pharmacy students had a high level of stress during the COVID-19 pandemic, which could be due to more searches on virtual networks about the news of the pandemic and their being more stressed. Further, less experience in stress management and appropriate coping skills are likely to be connected to higher levels of stress among younger people.

Conclusion:

The current study's findings demonstrated the greater demand that housewives with lung cancer have for treatment resources and psychological support; as a consequence, effective coping mechanisms and epidemic management should be reviewed in order to improve this group's access to these services and treatment options. In order to take the best possible action in this regard and implement a system of comprehensive interventions, including monitoring, screening, targeted, and referral interventions to lessen psychological distress and prevent mental health problems, it is also necessary to emphasize and concentrate on the planning of national strategies and first aid in crises via telemedicine and online services.

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