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Investigation of Treatment-Related Symptoms and Self-Care Strategies in Lung Cancer Patients

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ABSTRACT

This study aimed to investigate treatment-related symptoms in lung cancer patients undergoing chemotherapy and radiotherapy, as well as effective self-care strategies to alleviate these symptoms. A total of 202 lung cancer patients were surveyed using a treatment-related symptom checklist, Karnofsky Performance Status scale, and a self-care symptom relief questionnaire. The results showed that the most common treatment-related symptoms included fatigue (93.07%), loss of appetite (88.12%), nausea (82.67%), hair loss (74.75%), vomiting (66.83%), pain (64.85%), taste changes (62.87%) and constipation (60.89%). The study also gathered patients' self-care methods that they found effective in alleviating these symptoms. Findings suggest that lung cancer patients bear a significant burden of treatment-related symptoms, and various self-care strategies reported by the patients were effective in managing these symptoms.

1. Introduction

According to the 2020 statistics on the incidence and mortality of 36 types of cancer across 185 countries/regions by the International Agency for Research on Cancer, lung cancer remains the leading cause of cancer-related deaths globally, posing a significant threat to public health worldwide (Sung et al., 2021). In China, lung cancer is the top cause of cancer incidence and mortality, with its incidence rate continuously rising over the past few decades (Yang et al., 2019). The age range of lung cancer is very wide, from children to the elderly. In recent years, the incidence of lung cancer in young people

has tended to increase (Siegel et al., 2019). Lung cancer has severely threatened human life, health, and quality of life. Physically, lung cancer impairs multiple bodily functions and affects various organs, causing significant harm to patients. Economically, the high cost of lung cancer treatment imposes a considerable financial burden on most families. Emotionally, patients may develop anxiety, depression, and other negative emotions due to cancer-related symptoms, impacting their psychological well-being and hindering a positive outlook.

In the treatment of lung cancer, aside from surgical resection, radiotherapy and chemotherapy are effective measures to improve therapeutic outcomes (Downe-

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Wamboldt, et al., 2016). However, patients undergoing chemotherapy and radiotherapy often experience severe adverse reactions, such as nausea, vomiting, loss of appetite, and gastrointestinal dysfunction. Chemotherapy reactions may also lead to weight loss, fatigue, and reduced endurance, significantly impacting patients' daily lives. These treatment-related adverse reactions also create a heavy psychological burden on patients. Self-care refers to the actions individuals take to maintain life and comfort, and it is applicable to lung cancer patients. Given the high prevalence and difficulty in curing lung cancer, helping patients understand treatment-related symptoms and self-care strategies has become an essential task. Smith and colleagues have urged nurses to collect methods that patients find effective in controlling symptoms (Smith, et al., 2019). This study aims to investigate treatment-related symptoms induced by chemotherapy and radiotherapy in lung cancer patients, as well as self-care strategies that patients perceive as effective for symptom relief. The findings are expected to provide insights into alleviating treatment-related symptoms and improving the quality of life for lung cancer patients.

2. Materials and Methods

2.1 Study Participants

This study surveyed 202 lung cancer patients who were receiving treatment at an affiliated hospital. The inclusion criteria : ① diagnosed with primary lung cancer through pathological examination; ② TNM stage II, III, or IV; ③ aged 18–80 years; ④ Karnofsky Performance Status (KPS) score ≥ 60 ; ⑤ having undergone at least 2 weeks of radiotherapy or chemotherapy; ⑥ normal cognitive function; and ⑦ provided informed consent to participate in the study. Exclusion criteria: ① mental disorders; ② communication barriers or other reasons preventing survey completion; ③ terminal patients.

A total of 202 valid patient responses were collected. Among them, 121 were male and 81 were female. Patients were categorized into age groups: 20–44 years (22 cases), 45–65 years (82 cases), and over 65 years (98 cases). Educational levels included elementary school or below (65 cases), middle school (111 cases), and college or above (26 cases). Marital status was reported as 177 married and 25 unmarried patients. In terms of health insurance, 23 had urban health insurance, 96 had New Rural Cooperative Medical Insurance, 64 had employee insurance, and 19 were self-paying. Seven patients had no children, 71 had one child, 82 had two children, and 42 had three children. The treatment duration was as follows: more than one month for 45 patients, more than

three months for 71 patients, more than six months for 40 patients, and over 12 months for 46 patients. Regarding TNM staging, 12 were in stage II, 76 in stage III, and 114 in stage IV. 53 cases underwent chemotherapy, 26 cases received radiotherapy, 52 cases were treated with both chemotherapy and radiotherapy, and 124 cases underwent combined chemoradiotherapy. The KPS scores were: 60 (27 patients), 70 (53 patients), 80 (46 patients), 90 (64 patients), and 100 (12 patients).

2.2 Study Methods

2.2.1 Research Tools

① **General Information Questionnaire**: This included demographic data such as age, gender, educational level, marital status, number of children, as well as disease-related data such as TNM staging, treatment duration, and surgical history.

② **Karnofsky Performance Status Scale (KPS)** (Karnofsky, et al., 1991): The KPS scale was used to comprehensively assess patients' health status, with higher scores indicating better health and higher tolerance, while lower scores suggest poorer health and lower tolerance.

③ **Treatment-Related Symptom Checklist (TRSC)** (Williams, et al., 1997): The TRSC was employed to investigate symptoms experienced by patients during and after their last treatment cycle, with a 5-point scale ranging from 0 ("no symptom") to 4 ("very severe").

④ **Symptom Relief Self-Care Method Scale (SA: SCM)**: The Chinese version of the Symptom Relief Self-Care Method Scale, adapted by Williams et al.(2010), was used to understand the effective self-care methods employed by patients to alleviate symptoms.

2.2.2 Data Collection Method

The purpose, significance, and methods of this survey were explained to patients and their families. After obtaining informed consent, patients completed the questionnaires on-site. The completed questionnaires were promptly collected and securely stored to ensure their authenticity. A total of 226 patients participated in the study, with 202 valid questionnaires returned, resulting in an effective response rate of 89.38%.

2.2.3 Statistical Methods

Statistical analysis was performed using SPSS 21.0 software. Since symptom scores did not follow a normal distribution, the results were expressed as $M (P_{25}, P_{75})$. The findings on treatment-related symptoms and self-care methods were presented as percentages.

3. Results

3.1 Severity and Incidence of Treatment-Related Symptoms in Lung Cancer Patients

Lung cancer patients experienced a wide range of treatment-related symptoms, varying in severity. Among them, fatigue, loss of appetite, nausea, hair loss, and vomiting ranked highest in both severity and incidence. See Table 1.

3.2 Self-Care Methods for Symptom Relief in Lung Cancer Patients

During the investigation, data were collected on how patients managed treatment-related symptoms through self-care strategies. Table 2 outlines the self-care methods that patients identified as effective in alleviating the eight most severe and frequently occurring symptoms listed in Table 1.

Table 1. Severity and Incidence of Various Symptoms Among Lung Cancer Patients (n=202)

SYMPTOMS	SEVERITY	OCCURENCE Cases(%)
	M (P25, P75)	
Fatigue	2.00 (1.00, 3.00)	188 (93.07)
Loss of appetite	2.00 (0.00, 2.25)	178 (88.12)
Nausea	2.00 (1.00, 2.25)	167 (82.67)
Hair loss	2.00 (0.00, 3.00)	151 (74.75)
Vomiting	2.00 (0.00, 2.25)	135 (66.83)
Pain	1.00 (0.00, 2.00)	131 (64.85)
Taste alterations	1.00 (0.00, 2.00)	127 (62.87)
Constipation	1.00 (0.00, 2.00)	113 (60.89)

Table 2. Self-Care Methods that Patients Believe Can Effectively Alleviate Symptoms

SYMPTOMS(n)	SELF-CARE METHODS	CASES (n)
Fatigue (n=188)	Balance work and rest	108
	Take traditional Chinese medicine	62
	Supplement with vitamins	52
Loss of appetite (n=178)	Eat smaller, more frequent meals	99
	Vary food types	87
	Consume favorite foods	76
Nausea (n=167)	Avoid greasy, spicy, cold, and irritating foods	122
	Drink more warm water and suck on mints or hard candies	85
	Eat light and easily digestible foods	68
Hair loss (n=151)	Wear a wig	99
	Wear a hat	134
	Shave or cut remaining hair short	23
Vomiting(n=135)	Use antiemetic medication	144
	Avoid greasy foods	95
	Drink hot water	43
Pain (n=131)	Eat sour fruits and similar foods	86
	Pain relief medication	124
	Distract attention	56
Taste alterations (n=127)	Massage, acupuncture, and physical therapy	87
	Change food flavors	89
	Cook high-quality meals	76
Constipation (n=113)	Vary food types	88
	Change dietary habits	32
	Abdominal massage	98
	Eat more bananas and fresh fruits and vegetables	66
	Increase dietary fiber intake	72
	Drink more water, drink honey water before bed, and drink salt water in the morning	99

4 Discussion

4.1 Lung Cancer Patients Bear a Heavy Burden of Treatment-Related Symptoms

The survey revealed that lung cancer is associated with a multitude of symptoms, which significantly affect the physical and mental well-being of patients during treatment. According to Table 1, the most common treatment-related symptoms, with incidence rates exceeding 60%, include fatigue, loss of appetite, nausea, hair loss, vomiting, pain, taste alterations, and constipation. Williams et al. (2006). conducted a study on treatment-related symptoms in children with cancer and found that 100% of children undergoing chemotherapy experienced nausea. The most severe symptom reported by patients was fatigue, which may be due to the prolonged use of chemotherapy drugs. Qian Lijing et al. (2019). used a chemotherapy-related taste change scale and found that patients often experience changes in taste during treatment, which can lead to decreased appetite, nausea, and vomiting. Dehydration and electrolyte imbalances caused by nausea and vomiting, as well as prolonged bed rest, may lead to hypotension. Orthostatic hypotension, in particular, can occur when there is a change in position. Therefore, nurses and family members should closely monitor patients experiencing nausea and vomiting, ensuring that they avoid sudden or vigorous movements when getting out of bed to prevent falls due to hypotension. In addition, patients may experience various other symptoms, such as gastrointestinal discomfort, including stomach cramps, heartburn, and sensitivity to light and sound. Chemotherapy drugs may also cause diarrhea, significantly impacting patients' daily lives. Many patients are unsure how to manage these symptoms due to a lack of knowledge about self-care, and this can affect treatment outcomes. Enhancing patients' self-care abilities is crucial in managing post-treatment symptoms, and efforts should be made to encourage patients to actively improve their self-care skills.

4.2 Various Self-Care Methods Can Alleviate Treatment-Related Symptoms in Lung Cancer Patients

Patients identified several self-care methods that they believe effectively alleviate treatment-related symptoms. These methods include dietary adjustments, psychological regulation, biological therapies, traditional Chinese medicine (TCM), and prescription medications.

Dietary and lifestyle changes are considered effective self-care approaches for alleviating symptoms (Williams, et al., 2014; Lopez, et al., 2015). For example, patients

reported that consuming soft, easily digestible food or using a straw to drink liquid meals helps reduce gastrointestinal irritation when experiencing nausea and vomiting. Ensuring that meals are nutritious supports patients' physical strength during treatment. Proper dietary planning, including fresh, nutrient-rich food, can provide the energy needed for treatment and help prevent anemia, which can occur due to bone marrow suppression during radiotherapy and chemotherapy. Severe vomiting can be managed with prescription antiemetics, as patients reported seeking medical advice for such symptoms. Additionally, some patients reduced food intake to cope with vomiting. Rest was commonly cited as a method to alleviate fatigue and dizziness caused by treatment intolerance.

Psychological regulation, also known as mind-body therapy or psychotherapy, includes activities such as reading or adjusting one's mood. A positive mental state can help patients better cope with illness, as a healthy mindset promotes both treatment efficacy and recovery. Engaging in enjoyable activities can distract patients from pain and anxiety, reducing negative emotions. Brown et al. (2016). suggested that alternative therapies could help alleviate the perception of severe symptoms like pain by diverting patients' attention through enjoyable activities, thus reducing anxiety.

Biological therapies primarily involve vitamin supplements. For example, a common adverse reaction during treatment is loss of appetite, which can lead to weight loss and nutritional imbalances, preventing patients from receiving the necessary nutrients for treatment. Vitamin C has been found to alleviate symptoms such as nausea, loss of appetite, and sleep disturbances (Gong, et al., 2019).. Patients also reported that eating visually appealing and flavorful foods helps stimulate appetite, while consuming fresh fruits and vegetables boosts vitamin C intake.

Traditional Chinese medicine and techniques can also be utilized to alleviate symptoms. Williams et al. (2019) found that TCM effectively alleviated constipation, sleep disorders, loss of appetite, and taste changes caused by lung cancer treatments. Tai Chi improved sleep quality, while acupuncture and massage relieved numbness in the fingers and toes, as well as skin problems and fatigue.

Pain and vomiting during radiotherapy and chemotherapy can also be managed with prescription medications. Additionally, patients may experience changes in appearance, particularly severe hair loss. Some patients reported feelings of shame and low self-esteem due to changes in appearance, and they often used wigs or hats to conceal hair loss, helping to alleviate these negative emotions.

4.3 Enhancing Self-Care Abilities Can Improve Patient Survival and Quality of Life

As shown in Table 2, patients can adopt various self-care methods to alleviate treatment-related symptoms, such as resting more, changing their lifestyle, and adjusting their mindset. Through self-care, patients can reduce the burden of these symptoms, ultimately improving their survival rates. Since many lung cancer patients require long-term radiotherapy and chemotherapy to ensure treatment efficacy, it is essential to not only improve the quality of care but also enhance patients' self-management and intervention abilities. This will help increase survival rates and ensure a better quality of life. Educating patients about lung cancer-related symptoms and self-care methods, while alleviating their symptom burden, is critical. Patients should be informed that lung cancer symptoms are detectable and manageable, and early detection improves treatment success. Encouraging patients to improve their self-care skills will reduce the burden of treatment-related symptoms, promote successful cancer treatment, and enhance their survival rates and quality of life.

5. Conclusion

In conclusion, lung cancer patients bear a significant burden of treatment-related symptoms, which affect them to varying degrees. Many of the self-care methods reported by patients were found to be effective in alleviating symptoms caused by radiotherapy and chemotherapy. However, most patients initially lack awareness and understanding of treatment-related symptoms, leading to pessimism and insufficient coping strategies as symptoms worsen. Therefore, clinicians and nurses should encourage patients to actively learn about symptoms related to the early treatment of lung cancer and correct any misconceptions. Educating them that treatment-related symptoms are both preventable and manageable can enhance their symptom management skills. This, in turn, can improve their self-care abilities, reduce the burden of treatment-related symptoms, and ultimately improve their survival rates and quality of life.

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