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Study on the Effect of Clinical Nursing Pathway on Improving the Quality of Life of Lung Cancer Chemotherapy Patients

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Abstract: This paper is to explore the effect of clinical nursing pathway model on the improvement of quality of life in patients with lung cancer undergoing chemotherapy, so as to provide empirical support for the development of clinical nursing programs for such patients. From January 2021 to January 2024, 80 lung cancer patients admitted to our hospital were selected and divided into groups using a random number table method. Both groups received chemotherapy treatments. The control group (n=40) was administered conventional care measures, while the observation group (n=40) underwent care through the clinical care pathway model. The emotional scores, pain scores, sleep quality scores, quality of life scores, and cancer-related fatigue scores before and after the nursing interventions, as well as nursing satisfaction, were compared between the two groups. Prior to the nursing intervention, there were no statistically significant differences ($P>0.05$) in anxiety scores, depression scores, and pain scores between the two groups. Post-intervention, these scores decreased in both groups, with the observation group showing a more pronounced reduction ($P<0.05$). Similarly, before the intervention, no statistically significant differences in sleep quality scores were observed between the groups ($P>0.05$). After the intervention, the sleep quality scores decreased in both groups, with the observation group demonstrating a greater improvement ($P<0.05$). Before the intervention, there were no statistically significant differences in quality of life scores ($P>0.05$), but after the intervention, these scores increased in both groups, with the observation group showing a higher score ($P<0.05$). Pre-intervention, no statistically significant differences were found in cancer-related fatigue scores between the groups ($P>0.05$). Post-intervention, these scores decreased in both groups, with the observation group showing a more significant reduction ($P<0.05$). Additionally, the nursing satisfaction in the observation group was higher than that in the control group, with a statistically significant difference ($P<0.05$). The implementation of the clinical care pathway model for lung cancer patients undergoing chemotherapy can significantly enhance their quality of life, improve sleep quality, mitigate cancer-related fatigue, alleviate adverse emotional states, and elevate nursing satisfaction, demonstrating a favorable overall effect.

1. Introduction

Lung cancer constitutes a significant malignant tumor that poses a grave threat to human life and health. Since the 1970s, its incidence and mortality rates have been steadily increasing worldwide. The pathogenesis of lung cancer is rather intricate, closely linked to chronic pulmonary infections, environmental pollution, and unhealthy habits such as smoking. Given the severity and high risk associated with lung cancer, there is a significant demand for high-quality diagnosis, treatment, and nursing care from medical professionals. Typically, when lung cancer is detected, the disease has often progressed to the advanced stage, thereby missing the optimal surgical window. Consequently, chemotherapy is commonly employed; however, this treatment often induces toxic side effects, necessitating effective nursing interventions [1]. During the nursing process, not only must the nursing staff meticulously fulfill their care duties, but they must also endeavor to enhance the patients' quality of life to the fullest extent possible, ensuring comprehensive control over the disease. The clinical care pathway model, characterized by its orderliness, rationality, and precision, enables the provision of high-quality nursing services based on a temporal dimension. This ensures that patients receive more comprehensive nursing interventions, improving their overall condition, cancer-related fatigue, and sleep quality, thereby enhancing the overall nursing outcomes. This article selects 80 lung cancer patients admitted to our hospital from January 2021 to January 2024, aiming to analyze the effect of the clinical care pathway model on improving the quality of life of lung cancer patients undergoing chemotherapy. The findings are elucidated as follows [2].

2. Information and Methods

2.1. General information

From January 2021 to January 2024, 80 patients with lung cancer treated in our hospital were selected and divided into groups according to a random number table. Both groups were treated with chemotherapy regimens. The control group (n=40) received conventional care measures, with an age range of 61 to 79 years, and an average age of (65.32±2.16) years. Among them, there were 24 male patients and 16 female patients. The tumor types included 24 cases of small cell carcinoma and 16 cases of non-small cell carcinoma. The TNM staging was 18 cases at stage III and 22 cases at stage IV. The observation group (n=40) received clinical pathway care, with an age range of 60 to 83 years, and an average age of (65.62±2.30) years. This group included 25 male patients and 15 female patients [3]. The tumor types consisted of 28 cases of small cell carcinoma and 12 cases of non-small cell carcinoma. The TNM staging was 16 cases at stage III and 24 cases at stage IV. The comparison of general data ($P>0.05$).

Inclusion criteria: ① Confirmed diagnosis of advanced lung cancer through pathological examination; ② Age 60 years or older; ③ Complete clinical data; ④ Patients and their families signed the consent form.

Exclusion criteria: ① Accompanied by mental illness; ② Accompanied by central nervous system dysfunction; ③ Accompanied by liver and kidney abnormalities; ④ Accompanied by hematological diseases; ⑤ History of alcohol abuse or significant smoking history.

2.2. Methodologies

Control Group: Standard Care: Upon a patient's admission, health education is provided, appropriate examinations are arranged, and the patient and their family are informed about the clinical manifestations of lung cancer, potential adverse reactions, essential nursing points, and specific precautions during chemotherapy. Additionally, the implementation of treatment, nursing,

and health education measures for the patient is not time-bound; rather, it is tailored according to the patient's condition and disease severity. This approach ensures that the patient can maintain a calm and accepting mindset throughout their care.

Observation Group: Clinical Care Pathway: (1) First Day Post-Admission: Focus is placed on recording the patient's general information and examination results, documenting their medical history and disease severity. The patient is introduced to the chemotherapy regimen, its objectives, and the necessary precautions during treatment to ensure they maintain an optimistic outlook, thereby increasing their level of cooperation with the treatment. An assessment is made to determine if the patient is suitable for PICC catheter placement, and relevant information about the procedure is communicated. Additionally, the necessary medications for the catheterization are prepared in advance [4]. (2) Second Day Post-Admission: Catheter placement is performed on the patient, and their physiological state is assessed. The patient is advised to increase their daily water intake, and a dietary plan is formulated based on their dietary preferences. The catheterization is completed according to clinical standards, and details of the puncture are recorded. The patient is guided to undergo an X-ray examination to confirm the correct position of the catheter. Following successful catheterization, the patient is instructed to keep the puncture limb immobilized for at least six hours and to rest adequately. (3) Third to Fourth Day Post-Admission: The condition of the puncture site is evaluated, regular dressing changes are conducted, and close observation is maintained for any abnormal signs at the puncture site. The patient is guided to perform fist exercises with the affected limb. They are instructed to strictly follow the prescribed anti-emetic medication regimen and to consume easily digestible foods. The patient's family is encouraged to accompany them to foster a positive emotional state and prevent severe adverse emotional reactions. (4) Fifth Day Post-Admission: The patient is informed about the routine care and key points for managing the catheter post-discharge to prevent issues such as dislodgement or displacement during home care. Measures to prevent catheter contamination during bathing are emphasized. If ongoing chemotherapy is required, the patient will receive further health education during their next treatment session. Throughout the patient's prolonged chemotherapy treatment, the nursing plan is consistently implemented, and continuous clinical records are maintained [5].

2.3. Observation indicators

① Comparison of emotional and pain scores before and after care: Anxiety and depression scores are evaluated using the Self-Rating Anxiety Scale and the Self-Rating Depression Scale, with threshold values of 50 and 53, respectively, the scores being directly proportional to the severity of negative emotions. Pain scores are assessed using the Visual Analogue Scale, where a full score is 10, and the score is directly proportional to the degree of pain.

② Comparison of sleep quality scores before and after care: Evaluation is conducted using the Pittsburgh Sleep Quality Index, encompassing sleep latency, duration, disturbances, efficiency, quality, hypnotic medication use, and daytime dysfunction, with scores inversely proportional to sleep quality.

③ Comparison of quality of life scores before and after care: Assessment is made using the SF-36 scale, which includes mental health, social functioning, general health, physical role, vitality, bodily pain, emotional role, and physical functioning, with a full score of 100, and scores directly proportional to quality of life [6].

④ Comparison of cancer-related fatigue scores before and after care: Evaluation is based on the Cancer Fatigue Scale, which includes sensory, emotional, behavioral, and cognitive fatigue, each item rated on a scale of 1 to 10, higher scores indicating greater cancer-related fatigue.

⑤ Comparison of care satisfaction: Satisfaction is assessed using an in-house developed

satisfaction scale, comprising very satisfied, satisfied, and unsatisfied, where care satisfaction = (very satisfied + satisfied) / total number of cases × 100%.

2.4. Statistical processing

SPSS20.0 statistical software was used to analyze the data, mean + standard deviation conformed to normal distribution, ($\bar{x} \pm s$) for measurement data, t-value check, rate (%) for count data, X2 check, when P < 0.05, the difference between the two groups of data is statistically significant [7].

3. Results

3.1. Comparison of mood score and pain score before and after care

Before nursing, the two groups of patients' anxiety scores, depression scores and pain scores were compared, and the difference was not statistically significant (P > 0.05), after nursing, the two groups of patients' anxiety scores, depression scores and pain scores were reduced, and the observation group was lower than the control group, and the difference was statistically significant (P < 0.05), see Table 1;

Table 1 Comparison of mood scores and pain scores before and after care ($\bar{x} \pm s$) (points)

Group	number of examples	Anxiety scores		Depression score		Pain scores	
		Before Care	After Care	Before Care	After Care	Before Care	After Care
Observation Group	40	26.85±4.69	11.32±2.01	27.68±4.16	10.25±2.03	7.35±1.36	2.65±0.35
Control group	40	27.03±4.35	18.26±3.73	27.19±4.03	15.38±2.65	7.41±1.39	4.13±1.05
t	-	0.178	10.359	0.535	9.719	0.195	8.457
P	-	0.859	0.000	0.594	0.000	0.846	0.000

3.2. Comparison of sleep quality scores before and after care

Before nursing care, the two groups of patients' sleep quality scores were compared, and the difference was not statistically significant (P>0.05), after nursing care, the two groups of patients' sleep quality scores were reduced, and the observation group was lower than the control group, and the difference was statistically significant (P<0.05), see Table 2;

Table 2 Comparison of sleep quality scores before and after care ($\bar{x} \pm s$) (score)

Group	number of examples	Sleeping Time		Sleep duration		Sleep Disorders		Sleep efficiency	
		Before Care	After Care	Before Care	After Care	Before Care	After Care	Before Care	After Care
Observation Group	40	2.03±0.86	1.01±0.43	1.98±0.73	0.89±0.21	2.11±1.03	1.03±0.35	2.03±0.62	0.89±0.15
Control group	40	2.01±0.81	1.69±0.56	1.92±0.71	1.65±0.35	2.06±1.01	1.71±0.59	2.01±0.53	1.43±0.36
t	-	0.107	6.091	0.373	11.776	0.219	6.269	0.155	8.757
P	-	0.915	0.000	0.710	0.000	0.827	0.000	0.877	0.000

Table 2 (continued)

Group	number of examples	Sleep Quality		Hypnotic Applications		Daytime dysfunction	
		Before Care	After Care	Before Care	After Care	Before Care	After Care
Observation Group	40	2.16±0.88	1.06±0.41	2.25±0.61	1.01±0.43	2.20±0.59	0.93±0.36
Control group	40	2.19±0.89	1.58±0.53	2.29±0.60	1.63±0.50	2.16±0.57	1.51±0.45
t	-	0.152	4.908	0.296	5.946	0.308	6.365
P	-	0.880	0.000	0.768	0.000	0.759	0.000

3.3. Comparison of quality of life scores before and after care

Before nursing care, the quality of life scores of the two groups of patients were compared, and the difference was not statistically significant (P>0.05), after nursing care, the quality of life scores of the two groups of patients were elevated, and the observation group was higher than the control group, and the difference was statistically significant (P<0.05), see Table 3;

Table 3 Comparison of quality of life scores before and after care ($\bar{x} \pm s$) (points)

Group	number of examples	Mental Health		Social Functioning		General Health		Physiological functions	
		Before Care	After Care	Before Care	After Care	Before Care	After Care	Before Care	After Care
Observation Group	40	67.53±3.84	86.32±4.79	73.56±4.25	87.68±6.89	69.82±4.53	89.82±5.03	71.56±3.98	92.65±4.18
Control group	40	67.94±3.96	71.52±4.36	72.98±4.16	80.13±6.23	69.13±4.58	79.68±4.98	71.03±4.16	83.35±4.12
t	-	0.470	14.451	0.617	5.141	0.677	9.060	0.582	10.022
P	-	0.640	0.000	0.539	0.000	0.500	0.000	0.562	0.000

Table 3 (continued)

Group	number of examples	Energetic		Somatic Functioning		Emotional function		Physiological function	
		Before Care	After Care	Before Care	After Care	Before Care	After Care	Before Care	After Care
Observation Group	40	64.35±6.46	88.56±7.85	61.32±5.49	88.34±6.56	69.73±4.65	90.76±5.15	71.89±4.16	92.46±4.21
Control group	40	64.71±6.52	78.92±9.33	61.79±5.52	76.46±6.15	69.56±4.68	79.41±4.65	71.81±4.81	83.16±4.56
t	-	0.248	5.000	0.382	8.356	0.163	10.345	0.080	9.477
P	-	0.805	0.000	0.704	0.000	0.871	0.000	0.937	0.000

3.4. Comparison of cancer-caused fatigue scores before and after care

Before nursing care, the cancer-caused fatigue scores of the two groups of patients were compared, and the difference was not statistically significant (P > 0.05), and after nursing care, the cancer-caused fatigue scores of the two groups of patients were reduced, and the observation group was lower than the control group, and the difference was statistically significant (P < 0.05), as shown in Table 4;

Table 4 Comparison of cancer-caused fatigue scores before and after care ($\bar{x} \pm s$) (points)

Group	number of examples	Sensory fatigue		Emotional fatigue		Behavioral fatigue		Cognitive fatigue	
		Before Care	After Care	Before Care	After Care	Before Care	After Care	Before Care	After Care
Observation Group	40	6.34±1.27	2.13±0.56	5.71±1.41	2.33±0.43	5.43±1.25	2.34±0.77	4.37±1.30	1.14±0.35
Control group	40	6.45±1.30	3.14±0.78	5.60±1.52	3.28±1.16	5.35±1.26	3.17±0.97	4.48±1.35	3.16±0.97
t	-	0.383	6.653	0.336	4.857	0.285	4.239	0.371	12.389
P	-	0.703	0.000	0.738	0.000	0.776	0.000	0.712	0.000

3.5. Comparison of satisfaction with care

The nursing satisfaction of the observation group was higher than that of the control group, and the difference was statistically significant (P < 0.05), see Table 5.

Table 5. Comparison of satisfaction with care [n (%)

Group	Number of cases	Very satisfied	Satisfied	Unsatisfie	Satisfied
Observation Group	40	28	10	2	38(95.0)
Control group	40	23	8	9	31(77.5)
X^2	-	-	-	-	5.165
P	-	-	-	-	0.023

4. Discussion

Lung cancer is a type of malignant tumor with a high incidence in modern clinical practice. Currently, therapeutic approaches generally include surgical resection, radiation therapy, and chemotherapy. Most lung cancer patients undergo a combination of surgical procedures and chemotherapy to achieve the maximum clearance of lesions, thereby minimizing residual disease, significantly extending their overall prognosis and survival time. However, during extended chemotherapy regimens, patients are prone to developing a variety of adverse reactions, such as bone marrow suppression, lethargy, and poor sleep quality, which can severely impact their quality of life and potentially worsen their condition. Therefore, providing effective care to lung cancer patients undergoing chemotherapy is of paramount importance [8].

In this study, patients with lung cancer who received chemotherapy were cared for using a clinical pathway model. The impact of this approach on the quality of life of patients was analyzed, providing strong evidence for the development of nursing protocols for lung cancer patients undergoing chemotherapy. The results of this study indicated that after care, the anxiety scores, depression scores, and pain scores of patients in both groups decreased, with the observation group showing significantly lower scores than the control group ($P<0.05$). Post-care, both groups experienced a reduction in sleep quality scores, again with the observation group demonstrating lower scores than the control group ($P<0.05$). Following care, the quality of life scores of both groups increased, with the observation group exhibiting markedly higher scores than the control group ($P<0.05$) [9]. Additionally, cancer-related fatigue scores decreased in both groups, with the observation group scoring lower than the control group ($P<0.05$). The nursing satisfaction of the observation group was higher than that of the control group, suggesting that the clinical pathway model for nursing care of lung cancer patients on chemotherapy can improve emotional distress scores, pain levels, enhance sleep quality and overall quality of life, and reduce cancer-related fatigue, leading to higher patient satisfaction. The reason for these outcomes is that the clinical pathway model of care can organize nursing strategies along a longitudinal axis, with time serving as the horizontal axis, for the implementation of a clinical nursing plan. Care providers can tailor and deliver targeted, anticipatory, and planned care services based on the individual differences and actual conditions of patients. This not only elevates patient satisfaction, quality of life, and cognitive awareness but also encourages active participation of family members in the patient's care, thus enhancing the overall effectiveness of care and improving the patient's quality of life while reducing the severity of cancer-related fatigue.

In conclusion, the application of a clinical pathway model in the care of lung cancer patients undergoing chemotherapy can significantly enhance their quality of life and sleep quality, improve cancer-related fatigue, emotional distress, and pain levels, and achieve high nursing satisfaction, demonstrating an excellent effect.

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