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The Efficacy of Bundled Care in Preventing Nosocomial Infections among Elderly Patients with Lung Cancer

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Abstract: The Objective is to investigate the efficacy of bundled care in preventing nosocomial infections among elderly patients with lung cancer, thereby providing scientific basis for improving the quality of care and reducing the risk of hospital-acquired infections in this patient population. Ninety elderly patients with lung cancer, admitted between January 2024 and January 2025, were enrolled in this study. They were randomly assigned to either a control group or an experimental group, with 45 cases in each group. The control group was provided with routine care, whereas the experimental group received bundled care. The incidence of hospital-acquired infections in both groups was compared to assess the effectiveness of bundled care. The experimental group exhibited a notably lower incidence of hospital-acquired infections compared to the control group ($P<0.05$). Bundled care demonstrates a significant reduction in the incidence and severity of hospital-acquired infections in elderly patients with lung cancer. The widespread adoption of the bundled care model in the management of these patients is advocated to improve the quality of care and enhance patient recovery outcomes.

1. Introduction

Lung cancer ranks among the most prevalent cancers globally, particularly in the elderly population, where it exhibits high incidence and mortality rates. Elderly adults with lung cancer are susceptible to nosocomial infections during hospitalization due to age-related immune decline, a complication that not only intensifies patient suffering and prolongs hospital stays but also leads to treatment failure and mortality[1].

In recent years, bundled care has emerged as an innovative nursing model that has increasingly captured the attention of healthcare professionals. This approach involves a suite of scientific and systematic nursing measures designed to comprehensively and multifacetedly elevate the quality of patient care, with the ultimate goal of preventing infections. Bundled care includes a variety of nursing measures such as stringent hand hygiene practices, rational use of antibiotics, enhanced nutritional support for patients, and consistent monitoring of vital signs. The core principle of bundled care lies in the holistic application of diverse nursing methods to bolster patients' self-protection abilities and mitigate the risk of hospital-acquired infections[2]. This study investigates the efficacy of bundled care in preventing nosocomial infections in elderly patients with lung cancer.

2. Materials and Methods

2.1 General Information

Ninety elderly patients with lung cancer, admitted between January 2024 and January 2025, were enrolled in this study. They were randomly assigned to either a control group or an experimental group, with 45 cases in each group. The control group comprised of 23 males and 22 females, with the age distribution spanning from 60 to 85 years, and an average age of 72.5±6.8 years. The duration of their illness extended from 1 to 5 years, with an average of 2.8±1.2 years. In the experimental group, there were 24 males and 21 females, and the age range was from 61 to 84 years, with an average age of 71.9±7.1 years. The duration of their illness varied from 1 to 6 years, with an average of 3.1±1.4 years. Both groups were balanced in terms of gender, age, and duration of illness, ensuring comparability.

The inclusion criteria were set as follows: patients aged ≥60 years, with a pathological or cytological confirmation of lung cancer, and an anticipated hospital stay of at least one week.

The exclusion criteria were set as follows: patients with other severe conditions such as cardiovascular diseases, liver or renal failure, as well as those with a history of psychiatric disorders or who were unable to comply with nursing care.

2.2 Methods

The control group was provided with routine care, including close monitoring of vital signs such as heart rate, blood pressure, respiratory rate, and body temperature with regular recording and analysis to ensure stability of the condition. Nursing staff conducted routine assistance with activities such as repositioning and back percussion to avert pressure sores and lower the risk of respiratory infections. In terms of pharmacotherapy, there was strict compliance with physician-prescribed chemotherapy, analgesics, and supportive care, coupled with vigilant monitoring for adverse drug reactions and prompt adjustments to treatment regimens as necessary. Additionally, dietary advice was furnished to promote the consumption of nutrient-dense foods rich in protein and vitamins, thereby enhancing the immune system. For patients exhibiting psychological distress, the nursing staff provided emotional counseling to bolster their confidence in overcoming the disease.

The experimental group received bundled care that prioritized enhanced respiratory management. This included regular assessment of respiratory function, effective cough training, and sputum aspiration to minimize respiratory secretions accumulation. A strong emphasis was placed on preventing blood infections through strict adherence to aseptic technique principles during activities such as blood collection and intravenous therapy, in compliance with stringent disinfection and isolation protocols. Patients with indwelling catheters underwent rigorous catheter maintenance, including regular dressing changes and evaluations of catheter position and function to mitigate catheter-related infections. Nutritional support was customized based on patients' nutritional statuses with individualized diet plans and supplementary nutrition via nasogastric tubes or intravenous routes to enhance immunity. Optimizing ward environment management by maintaining good air circulation, regular disinfection, and creating a clean, comfortable recovery environment for patients. Psychological interventions included one-on-one communication and emotional support groups to alleviate anxiety, fear, and other negative emotions, reinforcing confidence in overcoming the disease. Multidisciplinary collaboration was strengthened among physicians, nurses, nutritionists, and psychological counselors to ensure comprehensive and continuous nursing services for patients[3].

2.3 Observation Indicators

Incidence of hospital-acquired infections was documented for patients in both the control and experimental groups.

2.4 Statistical Analysis

Data analysis was performed with SPSS version 22.0 software. Categorical data were expressed as percentages and analyzed using the chi-square (χ^2) test, while continuous data were presented as means ± standard deviations and analyzed using the t-test. A P-value <0.05 was considered a statistically significant difference.

3. Results

The incidence of hospital-acquired infections in the experimental group was significantly lower than that in the control group (P<0.05), as shown in Table 1.

Table 1 Comparison of Hospital-Acquired Infection Rates Between the Two Groups [Cases (%)].

Group	Number of Cases	Respiratory Infections	Blood Infections	Catheter-Related Infections	Overall Infection
Experimental Group	45	2 (4.44)	1 (2.22)	1 (2.22)	4 (8.89)
Control Group	45	7 (15.56)	3 (6.67)	2 (4.44)	12 (26.67)
χ^2					10.920
P					<0.05

4. Discussion

With the accelerating aging process in China, the number of elderly patients with lung cancer is increasing annually, thereby increasing the complexity of care required. Hospital-acquired infections (HAIs) are a common complication during the hospitalization of elderly lung cancer patients, significantly affecting their treatment outcomes and quality of life. Exploring effective nursing models to reduce the incidence of HAIs is of vital clinical significance[4]. The results of this study demonstrated that patients in the experimental group who received bundled care had a significantly lower incidence of hospital-acquired infections compared to patients in the control group who received routine care (P<0.05), suggesting that bundled care has a substantial advantage in preventing HAIs among elderly patients with lung cancer.

Bundled care is a multi-faceted and comprehensive nursing model that includes stringent hand hygiene practices, rational use of antibiotics, enhanced nutritional support for patients, and consistent monitoring of vital signs, all aimed at improving the overall quality of care. Bundled care can significantly reduce the incidence of HAIs and the severity of infections in elderly lung cancer patients. Additionally, it increases patients' self-protection awareness, thereby reducing the risk of infection. During the implementation of bundled care, nurses should strictly adhere to hand hygiene protocols, maintain cleanliness and sterility of the work environment, use antibiotics judiciously to avoid the emergence of resistant strains, strengthen nutritional support to boost patients' immunity, and regularly monitor patients' vital signs to promptly detect and address abnormalities. Furthermore, the nursing staff should enhance communication with patients and their families, providing necessary psychological support to improve patients' adherence[5].

In conclusion, bundled care is highly effective in preventing hospital-acquired infections in elderly lung cancer patients, significantly reducing infection rates and severity, improving nursing quality, and enhancing patient recovery outcomes. It is recommended that bundled care be widely applied in the nursing of elderly patients with lung cancer to improve overall nursing standards and patient quality of life. Future efforts should focus on further exploring and refining specific measures and implementation strategies of bundled care to provide more scientific and systematic nursing services for elderly lung cancer patients.

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