

Application Effect of Targeted Nursing in the Care of Elderly Patients with Severe Pneumonia and Its Influence on Psychological State and Sleep Quality

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Objective. To explore the application of targeted nursing in the care of elderly patients with severe pneumonia and its influence on psychological state and sleep quality.

Methods. 90 elderly patients with severe pneumonia treated in our hospital from January 2019 to January 2020 were chosen for the study and split into the control group and the experimental group, with 45 cases in each group. Routine nursing was performed to the control group, and the targeted nursing was introduced on this basis to the experimental group to compare their nursing satisfaction and inflammatory factor indicators, and evaluate their sleep quality and mental state by referring to the Pittsburgh Sleep Quality Index (PSQI) and Mental Status Scale in Non-Psychiatric Settings (MSSNS) before and after intervention. **Results.** Compared with the control group, the experimental group achieved significantly better PSQI scores ($P<0.001$), higher nursing satisfaction ($P<0.05$), and lower CRP indicators ($P<0.001$), TNF- α indicators ($P<0.001$), IL-6 indicators ($P<0.005$) as well as MSSNS scores ($P<0.001$). **Conclusion.** Performing targeted nursing to the elderly patients with severe pneumonia can effectively improve the clinical indexes, alleviate the negative emotions, and enhance the quality of life, which is worthy of application and promotion.

Key words: targeted nursing; elderly severe pneumonia; psychological state; sleep quality;

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Severe pneumonia, as a clinical respiratory disease, refers to the inflammation induced by pathogen invasion or infection at the location of gas exchange in the lungs, remote end airways and the lung interstitium^[1-2], with the clinical manifestations including tachypnea, a rapid heartbeat, anorexia and fatigue, which may be caused by factors such as auto immunity and degradation of respiratory tract structure^[3]. If effective treatment is not performed to the patients, multiple complications like the sepsis and septicemia will occur. Moreover, the disease will seriously compromise the life safety of patients because it is featured with high mortality

and rapid progress. At present, drug treatment is mostly adopted in the clinic to relieve the clinical symptoms of patients and prevent the occurrence of complications. However, elderly patients are prone to having clinical symptoms such as pulmonary infection because they usually suffer from several chronic diseases due to the low immunity^[4-6]. It was found clinically that performing a good nursing intervention during treatment could effectively improve the curative effect, which was beneficial to accelerate the recovery of patients. On this basis, the targeted nursing has been widely applied in the clinical care with significant outcomes. To further explore

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the application effect of targeted nursing in the care of elderly patients with severe pneumonia and its influence on the psychological state and sleep quality, 90 elderly patients with severe pneumonia admitted to our hospital from January 2019 to January 2020 were selected as the research object for the study, with the results summarized as follows.

MATERIALS AND METHODS

General Information

90 elderly patients with severe pneumonia admitted to our hospital from January 2019 to January 2020 were selected as the research object and divided into the control group and the experimental group according to the admission order, with 45 cases in each group.

Inclusion Criteria

① The patients were 60 years old or older; ② the patients were diagnosed as severe pneumonia according to the clinical diagnosis; ③ the patients were conscious and in stable condition; and ④ the study was approved by the Hospital Ethics Committee, and the patients and their family members understand the purpose and progress of the study and signed the informed consent.

1.3 Exclusion criteria

① The patients had several chronic diseases such as diabetes, hypertension and coronary heart disease; ② the patients suffered from long-term insomnia; and ③ the patients had malignant tumor.

Methods

The conventional nursing was performed to the control group, including closely monitoring the patients' vital signs, advising the patients to take the drugs on time, and informing them about the related precautions of medication. In addition, the venous channel was established and fixed properly to avoid adverse events such as distortion and folding. Meanwhile, the patients were encouraged to breathe deeply and do chest percussion after turned over with assistance, so as to discharge sputum. Finally, a comfortable and clean hospital environment was provided to the patients, and the dietary habit intervention was conducted to patients to form a diet with balanced nutrition.

On this basis, the targeted nursing was performed to the experimental group with the following specific steps. ① The nursing personnel conducted mechanical ventilation to patients under aseptic condition in strict accordance with the specification and

requirements, so as to avoid cross infection accident; ② if the patient was coughing up phlegm, the nursing personnel performed suctioning care in time to prevent airway blockage and did it gently to lower the damage to the airway mucosa; ③ when performing suction care, the nursing staff lifted the patient's head from the bed within the appropriate range to avoid accidentally inhalation; ④ the nursing staff used different oral rinses for oral care to the patients everyday; ⑤ the members of the nursing group were arranged reasonably to disinfect the ventilator tube regularly, solve problems in time and make records; ⑥ the vital signs of patients were closely observed by strengthening inspections under reasonable arrangement; ⑦ the humidity and temperature of patients' airway were kept constant to effectively reduce the occurrence of symptoms such as dyspnea; ⑧ the nursing staff communicated with the patients or their family members, carried out clinical psychological assessment to patients, and made targeted psychological guidance scheme, and for the patients with severe anxiety or depression, the nursing staff continuously provided psychological comfort and guidance, informed the patients of successful cases, guided the patients to accept the changes in their physiological status, so that the patients knew the importance of clinical rehabilitation; ⑨ the nursing staff popularized relevant disease knowledge to the patients, explained the precautions of severe pneumonia in detail, improved the patients' recognition to the disease, and enhanced the confidence of patients; ⑩ the nursing staff provided timely feedback on the clinical need of patients, and gave encourage and support to patients with communication disorders, so that they could feel the warmth from the nursing staff, relieved the mental stress, and keep a good mood.

Observation Indicators

The sleep quality of patients was evaluated by the Pittsburgh Sleep Quality Index (PSQI)^[7] on a scale of 0-21 points, with higher scores indicating poorer sleep quality.

The satisfaction of patients with nursing was investigated by the Patient Clinical Satisfaction Questionnaire^[8] proposed by our department, and the patients were advised to fill in the questionnaire truthfully. On a scale of 0-100 points, the higher scores indicated higher satisfaction.

After taking the fasting blood and separating the serum after centrifugation, the patients' c-reactive protein (CRP), tumor necrosis factor- α (TNF- α) and interleukin-10 (IL-10) were tested by the ELISA method in strict accordance with

the operation process and the specification on the test kits, which were made by MSK Biology Company.

The psychological states were evaluated by the Mental Status Scale in Non-Psychiatric Settings (MSSNS)^[9] before and after intervention on a scale of 0-152 points, and the higher scores indicated stronger response intensity of psychological states.

Statistical Processing

In this study, the data processing software was SPSS20.0, the picture drawing software was GraphPad Prism 7 (GraphPad Software, San

Diego, USA), the items included were enumeration data and measurement data, the methods used were χ^2 test, t-test and normality test, and differences were considered statistically significant at $P < 0.05$.

RESULTS

Comparison of General Information

The age, gender, BMI, duration of disease, smoking, drinking, and place of residence of patients in both groups were not significantly different ($P > 0.05$) but comparable, see Table 1.

Table 1
Comparison of general information [n(%)]

	Experimental group (n=45)	Control group (n=45)	χ^2 or t	P
Age (years old)			0.077	0.938
	70.21±1.23	70.23±1.22		
Gender			0.178	0.673
Male	23 (51.11)	21 (46.67)		
Female	22 (48.89)	24 (53.33)		
BMI (kg/m ²)			0.148	0.883
	25.37±1.59	25.42±1.61		
Duration of disease (d)			0.039	0.969
	5.12±1.21	5.13±1.23		
Smoking			0.045	0.832
Yes	20 (44.44)	21 (46.67)		
No	25 (55.56)	24 (53.33)		
Drinking			0.178	0.673
Yes	22 (48.89)	24 (53.33)		
No	23 (51.11)	21 (46.67)		
Place of residence			0.050	0.822
Urban area	31 (68.89)	30 (66.67)		
Rural area	14 (31.11)	15 (33.33)		

Comparison of PSQI Scores

The PSQI scores of the experimental group

were significantly better than those of the control group ($P < 0.05$), see Table 2.

Table 2
Comparison of PSQI scores before and after intervention ($\bar{x} \pm s$)

Group	n	Subjective sleep quality		Sleep latency		Sleep duration		Sleep quality	
		Before	After	Before	After	Before	After	Before	After
Experimental group	45	2.18±0.42	0.81±0.15	1.84±0.38	0.78±0.21	2.01±0.53	0.69±0.21	1.93±0.51	0.64±0.12

Control group	45	2.19±0.47	1.17±0.28	1.91±0.41	1.16±0.23	1.99±0.56	1.12±0.24	1.88±0.53	0.93±0.19
t		0.106	7.603	0.840	8.184	0.174	9.045	0.456	8.657
P		0.915	0.000	0.403	0.000	0.862	0.000	0.649	0.000

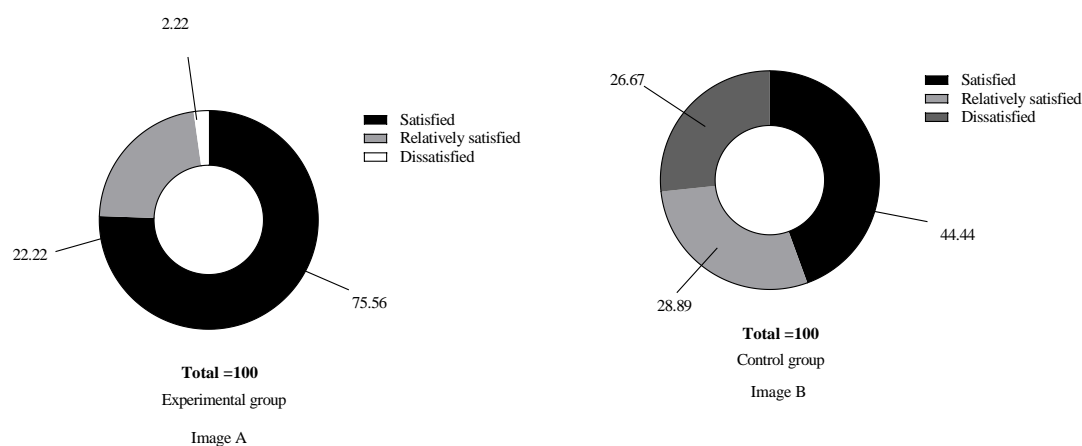
Group	n	Sleep disorder		Use of hypnotic drugs		Daily dysfunction		Total PSQI scores	
		Before	After	Before	After	Before	After	Before	After
Experimental group	45	1.96±0.52	0.67±0.24	1.72±0.45	0.58±0.22	2.11±0.51	0.76±0.19	13.64±4.34	4.52±1.68
Control group	45	1.94±0.61	1.05±0.31	1.69±0.53	0.91±0.41	2.12±0.45	1.12±0.34	14.11±4.28	7.94±2.19
t		0.167	6.502	0.289	4.758	0.098	6.200	0.517	8.312
P		0.867	0.000	0.772	0.000	0.921	0.000	0.606	0.000

Comparison of Nursing Satisfaction

The nursing satisfaction of the experimental

group was obviously higher than that of the control group ($P<0.05$), see Figure 1.

Figure 1
Comparison of satisfaction [n(%)]



Note: Image A and Image B indicated the nursing satisfaction of the experimental group and the control group, respectively;

In the experimental group, the total satisfaction rate was 97.78% (44/45), with 75.56% satisfied (34/45), 22.22% relatively satisfied (10/45), and 2.22% dissatisfied (1/45);

In the control group, the total satisfaction rate was 73.33% (33/45), with 44.44% satisfied (20/45), 28.89% relatively satisfied (13/45), and 26.67% dissatisfied (12/45);

The satisfaction of patients after nursing was significantly different ($\chi^2=10.879$, $P=0.001$).

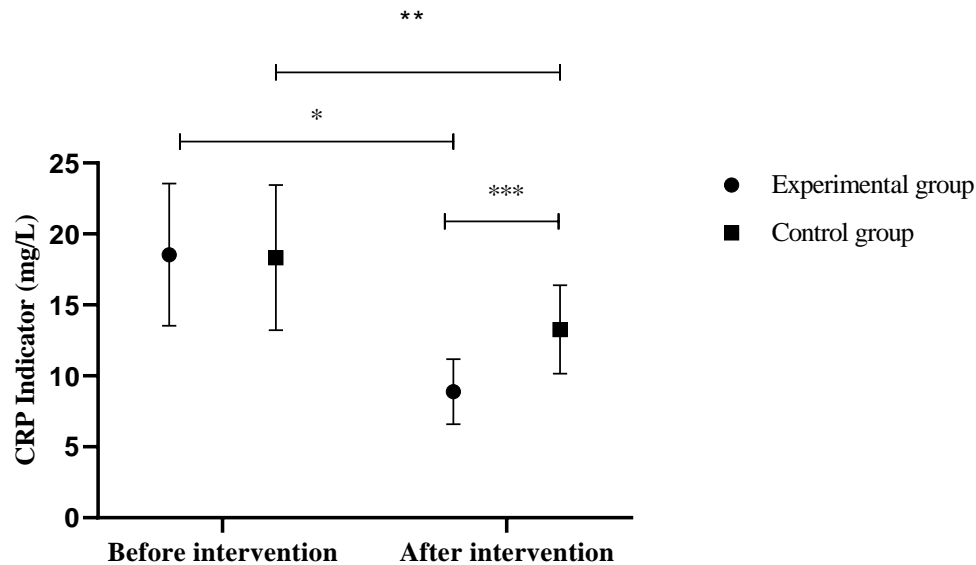
Comparison of CRP indicators

The CRP indicators of the experimental group

were clearly lower than those of the control group ($P<0.05$), see Figure 2.

Figure 2

Comparison of CRP indicators ($\bar{x}\pm s$)



Note: The horizontal axis indicated before and after intervention, and the vertical axis indicated the CRP indicators in mg/L;

The CRP indicators of the experimental group before and after intervention were (18.54±5.01) and (8.89±2.29), respectively;

The CRP indicators of the control group before and after intervention were (18.33±5.12) and (13.27±3.11), respectively;

* indicated that the CRP indicators of the experimental group before and after intervention were significantly different (t=11.752, P=0.000);

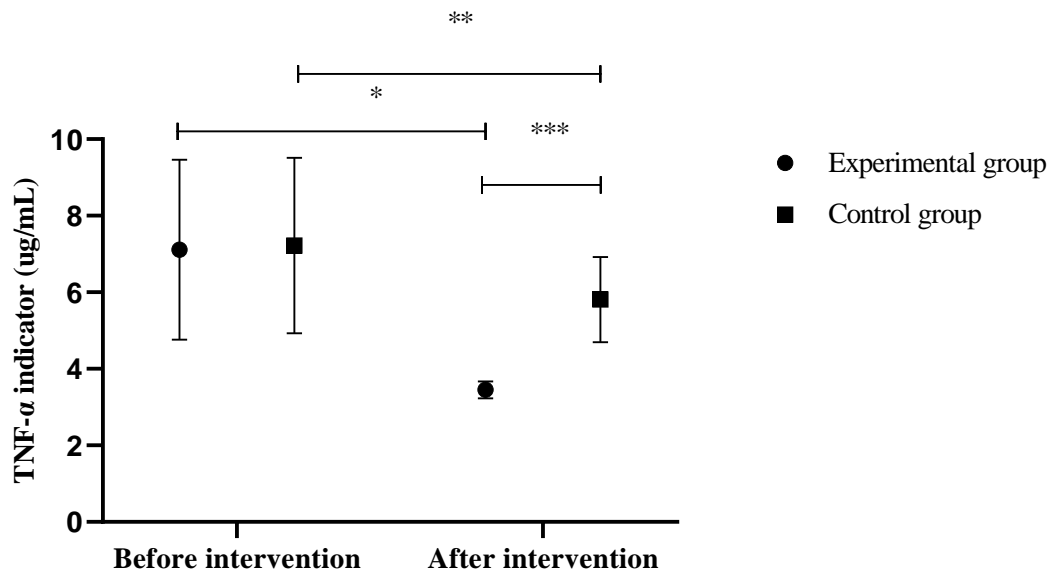
** indicated that the CRP indicators of the control group before and after intervention were significantly different (t=5.666, P=0.000); and

*** indicated that the CRP indicators of both groups after intervention were significantly different (t=7.608, P=0.000).

Comparison of TNF-αIndicators

The TNF-α indicators of the experimental group were obviously lower than those of the control group (P<0.05), see Figure 3.

Figure 3
 Comparison ofTNF-αindicators ($\bar{x}\pm s$)

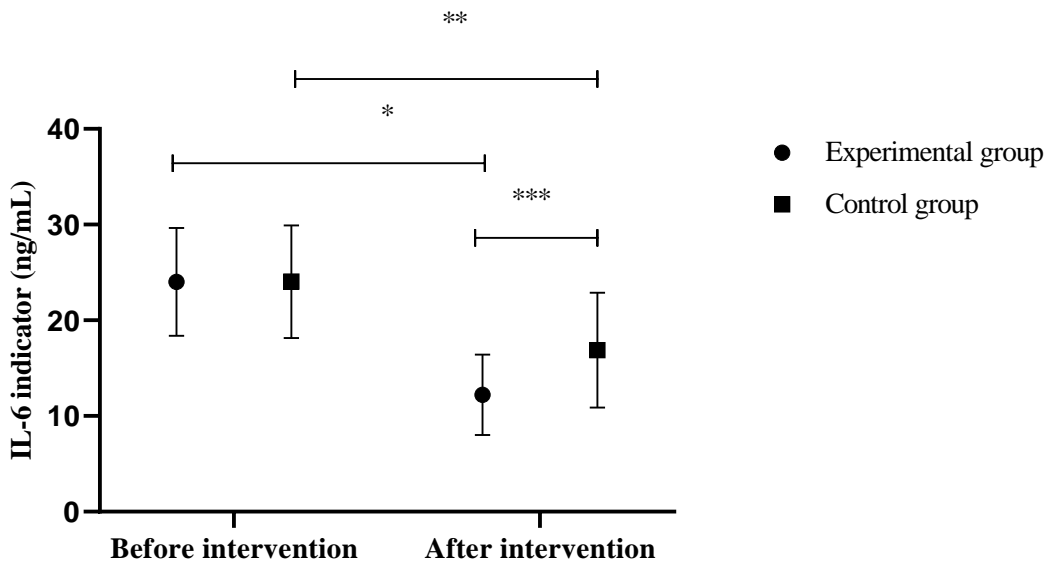


Note: The horizontal axis indicated before and after intervention, and the vertical axis indicated the TNF-αindicators in ng/mL;
 The TNF-αindicators of the experimental group before and after intervention were (7.11±2.35) and (3.45±0.22), respectively;
 The TNF-α indicators of the control group before and after intervention were (7.22±2.29) and (5.81±1.11), respectively;
 * indicated that the TNF-αindicators of the experimental group before and after intervention were significantly different (t=10.402, P=0.000);
 ** indicated that the TNF-α indicators of the control group before and after intervention were significantly different (t=3.717, P=0.004); and
 *** indicated that the TNF-αindicators of both groups after intervention were significantly different (t=13.990, P=0.000);

Comparison of IL-6 Indicators
 The IL-6 indicators of the experimental group were obviously lower than those of the control group (P<0.05), see Figure 4.

Figure 4

Comparison of IL-6 indicators ($\bar{x}\pm s$)



Note: The horizontal axis indicated before and after intervention, and the vertical axis indicated the IL-6 indicators in ng/mL;

The IL-6 indicators of the experimental group before and after intervention were (24.01±5.63) and (12.21±4.21), respectively;

The IL-6 indicators of the control group before and after intervention were (24.04±5.89) and (16.88±6.01), respectively;

* indicated that the IL-6 indicators of the experimental group before and after intervention were significantly different (t=11.259, P=0.000);

** indicated that the IL-6 indicators of the control group before and after intervention were significantly different (t=5.708, P=0.000); and

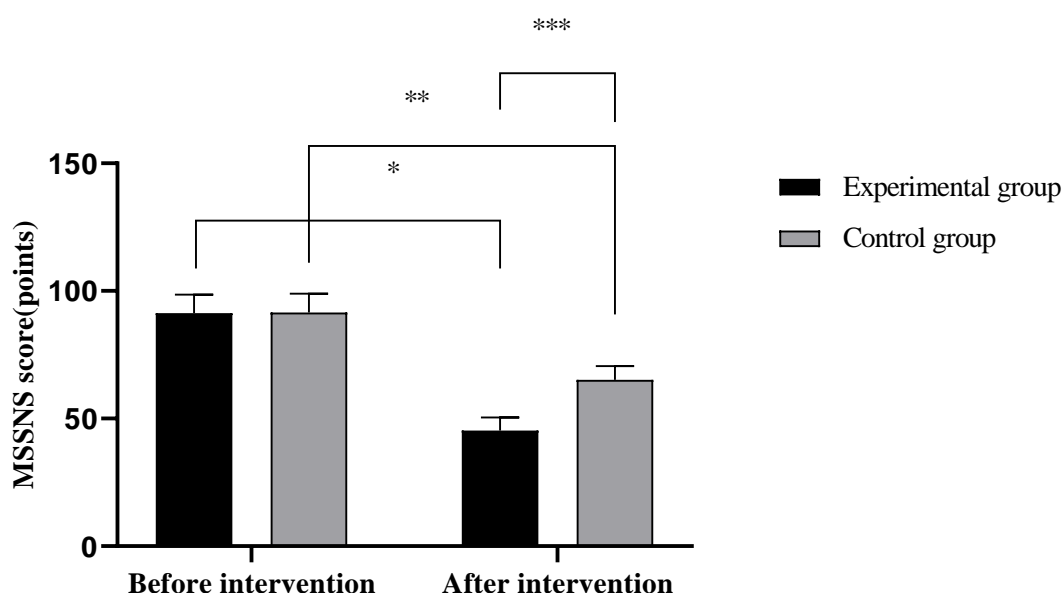
*** indicated that the IL-6 indicators of both groups after intervention were significantly different (t=4.269, P=0.000).

Comparison of MSSNS Scores

The MSSNS scores of the experimental group

were obviously lower than those of the control group (P<0.05), see Figure 5.

Figure 5
Comparison of MSSNS scores ($\bar{x} \pm s$)



Note: The horizontal axis indicated before and after intervention, and the vertical axis indicated the MSSNS scores (points);

The MSSNS scores of the experimental group before and after intervention were (91.33±7.25) and (45.27±5.12), respectively;

The MSSNS scores of the control group before and after intervention were (91.56±7.37) and (65.24±5.28), respectively;

* indicated that the MSSNS scores of the experimental group before and after intervention were significantly different ($t=34.812$, $P=0.000$);

** indicated that the MSSNS scores of the control group before and after intervention were significantly different ($t=19.475$, $P=0.000$); and

*** indicated that the MSSNS scores of both groups after intervention were significantly different ($t=18.214$, $P=0.000$).

DISCUSSION

As a common disease in respiratory medicine, severe pneumonia is characterized by rapid disease progression, critical condition and high mortality^[10-11], and failure to provide timely treatment and care to severe pneumonia patients will threaten their life safety and lower their quality of life. It was found in the clinic that a good care can effectively improve the symptoms and enhance the respiratory function, but the intervention behind time during nursing will prolong the treatment period, cause multiple complications, and affect the recovery progress^[12-14]. Targeted nursing is a brand-new nursing mode formed along with the medical development, which is patient-centered, meets the psychological demands and cares for the health of patients, provides a comfortable and harmony treatment environment, and finally achieves the goal of satisfying the patients and curing diseases^[15-17]. Relevant medical studies have shown

that most severe pneumonia patients have adverse emotions such as anxiety and depression because of limited cognitive ability to the disease, and these adverse emotions will affect the final treatment outcome of patients and even lead to the occurrence of multiple complications in severe cases^[18-20]. Therefore, applying targeted nursing to severe patients during treatment can solve their psychological problems individually and enable them to understand the disease correctly, follow the doctor's instruction with a reasonable and calm mind, build up confidence in fighting the disease, and strive for early recovery. Compared with the conventional nursing, targeted nursing is more systematic and normative, can perform different nursing measures according to the actual condition of patients, and reduce the randomness and blindness because of the basis attached, thus improving the compliance of patients to the medical personnel, alleviating the negative emotions and physiological status, and benefiting the fast recovery and curative effect^[21-23]. In this

study, the experimental group obtained significantly lower CRP indicators, TNF- α indicators and IL-6 indicators after intervention, indicating that the targeted nursing worked significantly and could inhibit the progression of the disease.

Besides, the physical and mental recovery in patients affect the sleep, an important physiological activity. Good sleep promotes self-healing of all systems in the body, while poor sleep can not only lead to memory loss, but also reduce the attention, which slows down the recovery of physical function^[24]. The study results presented that the PSQI scores of the experimental group were significantly better than those of the control group ($P < 0.05$) which was consistent with the findings of Lee and others^[25]. In their literature, it was pointed out that "after nursing, the intervention group obtained (0.88 ± 0.23) points in subjective quality sleep, (0.82 ± 0.37) points in sleep latency, (1.19 ± 0.57) points in sleep duration, (1.38 ± 0.54) points in sleep efficiency, (1.47 ± 0.56) points in sleep disorder, (1.65 ± 0.49) points in using hypnotic drugs, (1.45 ± 0.43) points in daily dysfunction, and (8.38 ± 1.08) points in the total PSQI score, and as for the routine group, the scores were (1.46 ± 0.59), (1.53 ± 0.45), (1.68 ± 0.76), (2.07 ± 0.66), (2.19 ± 0.61), (2.22 ± 0.52), (2.16 ± 0.76) and (11.89 ± 1.37), respectively, which were significantly worse than those of the intervention group ($P < 0.05$)", indicating that compared with routine nursing, the targeted nursing could effectively improve the sleep quality and guarantee the life safety for patients.

To sum up, applying targeted nursing in the care of severe pneumonia patients achieves significant nursing effect, improves the satisfaction of patients with nursing, reduces nurse-patient disputes, provides a good treatment environment, alleviate the patients' negative emotions, and enhances the sleep quality of patients, which is worthy of application and promotion.

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