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Original Article

Role of humanized nursing care in relieving cancer pain and improving quality of life of patients with advanced liver cancer

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Abstract: Objective: To study the role of humanized nursing care in relieving pain in patients with advanced liver cancer and improve their quality of life. Methods: A total of 100 patients with advanced liver cancer were divided into two groups according to a random number table: the observation group (n=50) and the control group (n=50). The control group was given routine nursing interventions, and the observation group was given humanized nursing care, plus routine nursing. Visual analogue scale (VAS) and brief pain inventory (BPI) were used to compare the intensity of cancer pain between the two groups; the World Health Organization quality of life (WHOQOL) survey was used to assess the quality of life between the two groups; self-rating anxiety scale (SAS) and self-rating depression scale (SDS) were used to evaluate the mental state of the two groups; Pittsburgh sleep quality index (PSQI) was used to measure sleep quality of the two groups; the median survival and half-year survival rate of the two groups were calculated and recorded. Results: VAS scores and BPI scores of the two groups after nursing were significantly lower than those before nursing (both P<0.001), and the observation group had significantly lower scores than the control group (P<0.01). SAS scores and SDS scores of the two groups after nursing were significantly lower than those before nursing (both P<0.001), and the observation group had significantly lower scores than the control group (P<0.01). WHOQOL scores of the two groups after nursing were significantly higher than those before nursing (both P<0.001), and the observation group had significantly higher scores than the control group (P<0.01). The scores of sleep quality, sleep duration, sleep disturbance, sleep latency, sleep efficiency, daytime dysfunction and use of sleep medication for the two groups after nursing were significantly lower than those before nursing (all P<0.001), and the observation group had significantly lower scores than the control group (P<0.01). The observation group had significantly longer median survival and higher half-year survival rate than the control group (P<0.05). Conclusion: Humanized nursing care for patients with advanced liver cancer can alleviate the degree of cancer pain, relieve their negative mood, and improve their quality of life and sleep quality. It is worth being popularized in clinical practice.

Keywords: Advanced liver cancer, humanized nursing care, cancer pain, quality of life, sleep quality

Introduction

Liver cancer is a malignant tumor with high incidence. It accounts for about 19.00% of all deaths from malignant diseases, and its mortality rate is second only to that of gastric cancer [1-3]. Despite the ongoing rapid development of medical technology, more than 10,000 people die of liver cancer every year in China [4, 5]. Because of the malignancy of liver cancer and complications like cancer pain, loss of appetite and dyspnea, patients with advanced liver cancer are more likely to experience negative emotions including fear, anxiety and irritability, leading to patients' loss of confidence in treatment and refusal to cooperate. In the past, routine nursing care was mostly used in clinical practice, but this nursing model is not patient-oriented and could not cater to the needs of patients. Humanized nursing care is patient-centered and guided by modern nursing concepts. Customized nursing strategies are formulated according to the physiological, psychological and mental states of each patient. Some scholars applied humanized nursing care to esophageal cancer patients receiving radiotherapy. The results showed that the scores of social function, mental state and emotional

function of the group who has received humanized care were significantly higher than those of the routine nursing group after 3 months [6].

However, at this stage, only the use of humanized care for the surgical treatment of patients with early liver cancer has been widely reported. This study aimed to explore the efficacy of humanized nursing care in relieving cancer pain and improving the quality of life of patients with advanced liver cancer.

Materials and methods

Patients

A total of 100 patients with advanced liver cancer treated in The First People's Hospital of Wenling, The Affiliated Wenling Hospital of Wenzhou Medical University, from May 2017 to October 2018 were divided into two groups according to a random number table: the observation group (n=50) and the control group (n=50). Inclusion criteria: Patients were over 18 years old; patients had no contraindications for this study; patients had stable vital signs and over 3 months' estimated survival time; patients had complete clinical data; patients had no cognitive impairment; patients had communicative competence. Exclusion criteria: Patients who withdrew from the research; patients with poor compliance; patients in critical condition; patients who had serious diseases of other organs. This study was approved by the Ethics Committee of The First People's Hospital of Wenling, The Affiliated Wenling Hospital of Wenzhou Medical University, and the participants and their families signed the informed consent.

Methods

Both of the two groups were given routine nursing care at first, including guidance on health, emotional management, daily diet, and work and rest, as well as information about the importance of taking medications according to doctor's advice.

The observation group received additional humanized care. First, counseling services were provided to the patients to build up their confidence in treatment. Because patients with advanced liver cancer have been afflicted by this disease and the resulting cancer pain for a long time, they are more likely to lose confidence in treatment. Nursing staff actively communicated with patients and their families at the moment patients were admitted to the hospital, and introduced to state-of-the-art treatment options for this disease, in order to minimize patients' fear and relieve patients' anxiety. At the same time, patients were encouraged to stay active, face disease-related problems, and cooperate with doctors effectively.

Second, ward environment was improved and possible stimuli that can cause pain were removed. Cancer pain is one of the most common complications in patients with advanced liver cancer. It can seriously damage patients' mental health and reduce their confidence in treatment. Nurses offered targeted nursing care to each patient according to his/her degree of cancer pain so as to improve the patient's control of cancer pain. Medications were used to relieve pain when necessary. At the same time, the interior of the ward was decorated with indoor plants to make the ward as comfortable as possible. In addition, a special "wish wall" on which patients and their family members wrote their wishes and expectations was set up in the ward. Positive energy was further promoted by this measure and patients were able to feel the warmth of the family and maintain an optimistic attitude towards life.

Third, patients were trained to relax their body and mind and encouraged to perform a certain amount of exercise. Patients and their families were instructed by the nursing staff to lie down in a comfortable and relaxed state, and required to close their eyes and rest their minds. Patients were also told to take a slow and deep breath before exhaling their breath naturally. At the same time, patients were encouraged to use self-suggestion to fully alleviate their tension and fear. Apart from deep breathing exercises, patients and their family members did mild exercises such as Tai Chi and walking when their physical conditions permitted.

Lastly, optimal diet plan was worked out and acupoint massage was performed. Nurses formulated personalized a diet plan for each patient, and patients and their families were encouraged to eat light and increase the intake of foods that are digestible and rich in protein, as well as eat more fresh fruit and vegetables to keep their bowel movements smooth. Be-

Table 1. Comparison of the clinical data between the two groups

Group	Observation group (n=50)	Control group (n=50)	t/χ^2	P
Gender (n)			0.040	0.841
Male	25	26		
Female	25	24		
Age (years)	49.7±2.7	50.1±2.8	0.727	0.469
Average BMI (kg/m^2)	18.13±3.06	18.24±2.98	0.182	0.856
Average course of disease (years)	3.04±0.31	3.07±0.32	0.484	0.630
Complications (n)			0.523	0.914
Hypertension	2	3		
Diabetes	4	3		
Hyperlipidemia	3	4		
Others	2	3		
Cancer stage (n)			1.000	0.317
III	23	28		
IV	27	22		

Note: BMI, body mass index.

sides, patients and their families were taught how to massage their head and ears to promote cerebral circulation.

Observation parameters and efficacy assessment

Visual analogue scale (VAS) and brief pain inventory (BPI) were used to measure the intensity of cancer pain in the two groups before and after nursing [7, 8]. The full score of both scales was 10, and a higher score indicated greater pain intensity. The World Health Organization quality of life (WHOQOL) scale was used to evaluate changes in the quality of life of the two groups before nursing and 1 month after nursing. The WHOQOL is a self-reporting questionnaire which assesses 4 domains of quality of life: physical health, psychological health, social relationships, and environment. The full score was 35 and a higher score meant a better quality of life [9]. Self-rating anxiety scale (SAS) and self-rating depression scale (SDS) were used to evaluate the mental states of the two groups, and higher scores corresponded to higher levels of anxiety and depression [10, 11]. Pittsburgh sleep quality index (PSQI) was used to measure sleep quality of the two groups before nursing and 14 days after nursing. It differentiated "poor" from "good" sleep by measuring seven domains: sleep quality, sleep duration, sleep disturbance, sleep latency, sleep efficiency, daytime dysfunction and use of sleep medication. The patient self-rated each of these seven areas of sleep. Scoring of the answers was based on a 0 to 3 scale. The seven component scores were then summed to yield a global PSQI score, which had a range of 0-21; higher scores indicated worse sleep quality [12]. The median survival and half-year survival rate of the two groups were calculated and recorded.

Statistical methods

SPSS 20.0 statistical software was used to analyze the data. The measurement data fit normal distribution as confirmed by Kolmogorov-Smirnov test (KS-test) and were expressed as mean ± standard deviation ($\bar{x}$ ± sd). Paired t-test was used for comparison within groups before and after nursing, and independent t-test was used for comparison between the two groups. Enumeration data were expressed as n/% and compared with χ^2 test. Log-rank test was used to compare survival time between the two groups. $P<0.05$ meant the difference was statistically significant.

Results

Comparison of the clinical data between the two groups

There was no statistically significant difference in baseline information including gender, age, average body mass index (BMI), average course of disease, complications and stages of cancer between the two groups (all $P>0.05$). See **Table 1**.

Comparison of the degree of pain between the two groups before and after nursing

There was no statistically significant difference in the degree of pain between the two groups before nursing ($P>0.05$). VAS scores and BPI scores of the two groups after nursing were significantly lower than those before nursing (both

Table 2. Comparison of degree of pain between the two groups before and after nursing ($\bar{x}$ ± sd)

Group	VAS	BPI
Observation group (n=50)		
Before nursing	7.11±0.18	8.35±0.67
After nursing	3.06±0.13$^{**,\#\#\#}$	4.98±0.40$^{**,\#\#\#}$
Control group (n=50)		
Before nursing	7.13±0.20	8.34±0.59
After nursing	5.88±0.14$^{\#\#\#}$	6.05±0.35$^{\#\#\#}$

Note: Compared with the control group after nursing, **P<0.01; compared with before nursing within the group, $^{\#\#\#}$P<0.001. VAS, visual analogue scale; BPI, brief pain inventory.

Table 3. Comparison of mental states between the two groups before and after nursing ($\bar{x}$ ± sd)

Group	SAS	SDS
Observation group (n=50)		
Before nursing	52.74±7.89	52.69±7.41
After nursing	39.03±6.35$^{**,\#\#\#}$	38.75±7.01$^{**,\#\#\#}$
Control group (n=50)		
Before nursing	52.77±7.80	52.72±7.39
After nursing	45.13±5.27$^{\#\#\#}$	45.08±6.03$^{\#\#\#}$

Note: Compared with the control group after nursing, **P<0.01; compared with before nursing within the group, $^{\#\#\#}$P<0.001. SAS, self-rating anxiety scale; SDS, self-rating depression scale.

Table 4. Comparison of quality of life between the two groups before and after nursing ($\bar{x}$ ± sd)

Group	WHOQOL
Observation group (n=50)	
Before nursing	16.26±4.04
After nursing	30.35±2.23$^{**,\#\#\#}$
Control group (n=50)	
Before nursing	16.25±4.05
After nursing	22.48±2.17$^{\#\#\#}$

Note: Compared with the control group after nursing, **P<0.01; compared with before nursing within the group, $^{\#\#\#}$P<0.001. WHOQOL, World Health Organization quality of life.

P<0.001), and the observation group had significantly lower scores than the control group (P<0.01). See **Table 2**.

Comparison of mental states between the two groups before and after nursing

There was no statistically significant difference in mental states between the two groups before nursing (P>0.05). SAS scores and SDS scores of the two groups after nursing were significantly lower than those before nursing (both P<0.001), and the observation group had significantly lower scores than the control group (P<0.01). See **Table 3**.

Comparison of quality of life between the two groups before and after nursing

There was no statistically significant difference in quality of life between the two groups before nursing (P>0.05). WHOQOL scores of the two groups after nursing were significantly higher than those before nursing (both P<0.001), and the observation group had significantly higher scores than the control group (P<0.01). See **Table 4** and **Figure 1**.

Comparison of sleep quality between the two groups before and after nursing

There was no statistically significant difference in sleep quality between the two groups before nursing (P>0.05). The scores of sleep quality, sleep duration, sleep disturbance, sleep latency, sleep efficiency, daytime dysfunction and use of sleep medication for the two groups after nursing were significantly lower than those before nursing (all P<0.001), and the observation group had significantly lower scores than the control group (P<0.01). See **Table 5**.

Comparison of median survival and half-year survival rate between the two groups

The median survival for advanced liver cancer patients after treatment was 4-7 months. The median survival of the observation group was 9.03±0.16 months, and that of the control group was 6.81±0.33 months. Meanwhile, the half-year survival rate of the observation group was 90.00% (45/50), and that of the control group was 74.00% (37/50). The observation group had significantly longer median survival and higher half-year survival rate than the control group (both P<0.05). See **Figure 2**.

Discussion

Primary liver cancer is a common malignant disease in China and one of the most common malignant digestive diseases in the world. The

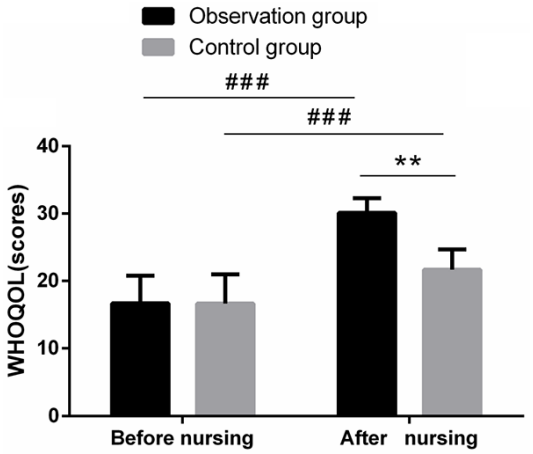

Figure 1. Comparison of quality of life between the two groups before and after nursing. Compared with the control group after nursing, **P<0.01; compared with before nursing within the group, ###P<0.001. WHOQOL, World Health Organization quality of life.

incidence of primary liver cancer has increased significantly in recent years [13]. Because of the subtle clinical characteristics of early liver cancer, and Chinese people's reluctance to seek medical attention, many liver cancer patients were not diagnosed until the disease had become advanced, and this can have a huge impact on the quality of life of patients and their families [14]. In the past, routine nursing care was often used for patients with advanced liver cancer. Although this nursing model is universally adopted and can be applied to a wide range of patients, it is far from being satisfactory as it is often performed in strict accordance with doctors' advice, resulting in lack of effective communication between nurses and patients. Due to the malignancy of the disease, routine nursing care also risks throwing the patients into a variety of negative mental states. As a result, patients' quality of life can be adversely affected. At present, with the continuous change of medical models, the concept of nursing in clinical practice has changed from "disease-centered" to "patient-centered". Also, with the ever-increasing health consciousness and nursing needs among patients, nursing care at this stage has become more humanized [15]. Research shows that the core of humanized nursing care is the "people-oriented" idea, and its ultimate goal is to make patients feel as contented and comfortable as possible in their mental, physical, and social spiritual states [16]. Humanized nursing care cannot only improve the relationship between nurses and patients, but also expand the service field of nurses and improve their service skills [17]. Foreign clinical reports show that patients with cardiac surgery were highly satisfied with the humanized care offered to them, and their quality of life was significantly improved [18].

Cancer pain is one of the most common complications of malignant tumors. According to clinical reports, about 30% to 50% of cancer patients suffered from cancer pain, while the proportion of advanced cancer patients with cancer pain can be as high as 60% to 90% [19]. It can exert a great impact on the physical and mental state, treatment methods and quality of life of patients. If effective nursing care is provided during the period, it will help to reduce the pain level of patients and inhibit the progression of disease. At the same time, studies have found that the progression of liver cancer is not only related to physical and chemical factors, but also closely related to patients' psychological state and self-suggestion. Negative thoughts such as despair, fear and anxiety can also lead to excessive tension of the body's central nervous system, which can further damage the body's immune function, therefore making patients extremely sensitive to pathogenic factors and accelerating the progression of liver cancer [20]. This study showed that the VAS, BPI, SAS and SDS scores of the two groups after nursing were significantly lower than those before nursing, and the observation group had considerably lower scores than the control group. WHOQOL scores were significantly increased after nursing, and WHOQOL scores of the observation group were significantly higher than those of the control group. Besides, the median survival and half-year survival rate of the observation group were significantly higher than those of the control group. These results demonstrated that humanized nursing care could effectively alleviate patients' pain, improve patients' negative mental states like irritability, anxiety, etc., and help to improve their quality of life, median survival and half-year survival rate. The reasons could be that humanized nursing care provided targeted nursing for patients through counseling services, ward environment improvement and physical and mental relaxation. It could help improve patients' disturbed psychological states, and then

Table 5. Comparison of sleep quality between the two groups before and after nursing ($\bar{x}$ ± sd)

Index	Observation group (n=50)		Control group (n=50)	
	Before nursing	After nursing	Before nursing	After nursing
Subjective sleep quality	2.21±0.20	0.87±0.03**,###	2.23±0.21	1.38±0.08###
Sleep duration	2.15±0.16	0.91±0.04**,###	2.17±0.15	1.61±0.07###
Sleep disturbance	2.24±0.19	0.77±0.09**,###	2.22±0.18	1.60±0.05###
Sleep latency	2.13±0.25	0.90±0.03**,###	2.14±0.26	1.27±0.02###
Habitual sleep efficiency	2.27±0.26	0.71±0.06**,###	2.30±0.28	1.10±0.05###
Daytime dysfunction	2.40±0.16	0.62±0.05**,###	2.41±0.18	1.15±0.06###
Use of sleep medication	2.35±0.27	0.60±0.06**,###	2.38±0.26	1.14±0.19###

Note: Compared with the control group after nursing, **P<0.01; compared with before nursing within the group, ###P<0.001.

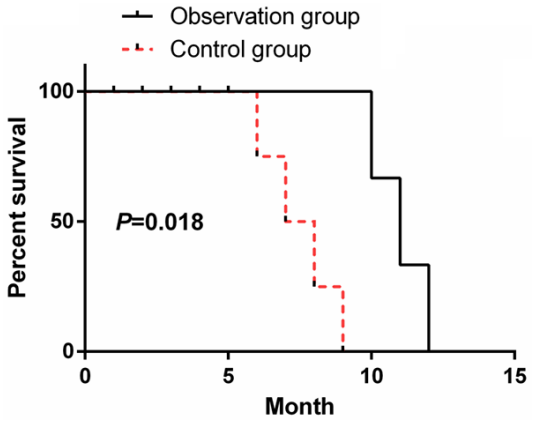

Figure 2. Comparison of survival time between the two groups.

play an important role in reducing cancer pain and improving patients' quality of life.

Studies have also found that about 75% to 90% of patients with advanced liver cancer have sleep disorders, which are mainly caused by negative emotions [21]. Low sleep quality can induce persistent poor physical and mental state, which can in turn lead to poorer sleep quality, resulting in a vicious cycle. The results of this study showed that the scores of sleep quality, sleep duration, sleep disturbance, sleep latency, sleep efficiency, daytime dysfunction and use of sleep medication for the two groups after nursing were significantly lower than those before nursing, and the observation group had significantly lower scores than the control group. These results proved the efficacy of humanized care in improving the negative mood and sleep quality of patients with advanced liver cancer. The reasons could be that the relaxation techniques and acupoint massage involved in humanized care could effectively release the pressure felt by patients with advanced liver cancer. This stress relief could significantly improve the excitability of the parasympathetic nervous system, alleviate the stress response and maintain the body's autonomic response, thereby significantly improving the quality of sleep. However, the sample size in this study was small, and the exact mechanism of how humanized nursing care affects sleep disorders still needs to be further studied in a large-scale and multi-center research.

In conclusion, humanized nursing care for patients with advanced liver cancer can significantly improve negative emotions including anxiety and depression, reduce cancer pain and help improve their quality of life and sleep. As a whole, it is worth being popularized in clinical practice.

Disclosure of conflict of interest

None.

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