Original Article
The Effect of 5A nursing intervention on living quality and self-care efficacy of patients undergoing chemotherapy after hepatocellular carcinoma surgery

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Abstract: Objectives: This paper explored and analyzed the effect of 5A nursing intervention on living quality and self-care efficacy of patients undergoing postoperative chemotherapy after hepatocellular carcinoma surgery. Methods: A total of 97 patients with hepatocellular carcinoma hospitalized from March 2017 to June 2019 were chosen as subjects and separated to the control group (n=47) and observation group (n=50) based on the admission time. The control-group received a conventional nursing care mode, and the observation-group was given the 5A nursing care mode in addition to the conventional care mode in the control group. Self-care efficacy, SF-36 quality of life, cancer-related fatigue degree and satisfaction with nursing work of patients pre- and post-intervention were compared between the two groups. Results: The self-care efficacy of the two groups post-intervention was critically higher than during pre-intervention (P<0.05), and the index of the observation group was significantly higher than that of the control group (P<0.05). The scores in each dimension of life quality in both groups after intervention were remarkably higher than those for pre-intervention (P<0.05), and the index in observation group was notably higher than that in the control group (P<0.05). Cancer-related fatigue degree of the two groups of patients during post-intervention was critically higher than those in pre-intervention (P<0.05), while during post-intervention, the index in control group was notably higher than in observation group (P<0.05). The satisfaction degree of nursing skills, service attitude, health training and hospital condition in the observation group were significantly higher than those in the control group (P<0.05). Conclusion: The model of 5A nursing intervention can ameliorate the self-care efficacy and living quality of patients undergoing chemotherapy after hepatocellular carcinoma surgery. The intervention can also help alleviate cancer-related fatigue during treatment, and improve the satisfaction degree of patients with nursing care, which is worthy of clinical promotion and application.

Keywords: 5A nursing intervention, postoperative chemotherapy after hepatocellular carcinoma, quality of life, self-care efficacy

Introduction

Primary hepatic carcinoma is one of the commonly treated malignant tumors in China. According to relevant investigations and studies, the disease has an increasingly high incident rate in recent years [1]. Hepatectomy is currently the superior method for treating primary hepatic carcinoma. However, patients may relapse at any time after surgery, which becomes a serious issue affecting the survival of sufferers [2, 3]. Systematic chemotherapy after surgery is one of the commonly used clinical treatment schemes. It can effectively prevent hepatocellular carcinoma from recurring, prolonging the survival time and improving living quality [4, 5]. However, systematic chemotherapy may impose different degrees of toxic side effects on patients while exerting therapeutic effects. In addition, patients with hepatic carcinoma are often accompanied by heavy psychological burden, which leads to the decline of their social function and quality of life [6, 7]. The 5A nursing model is a new nursing model that is based on

a self-management model of patients. The model primary provides nursing intervention through inquiry, suggestion, evaluation, help and follow-up to patients. The model can activate the potential for self-management, and has positive feedback about the self-care efficacy degree of patients, thereby achieving the purpose of promoting the rehabilitation of patients [8]. Studies have shown that the 5A nursing model can effectively provide feedback about the patient's information, improve their self-management capabilities, and enable the care of family members and medical staff to be more professional and effective [9]. This study explored and analyzed the effectiveness of 5A nursing intervention on life quality and self-care efficacy of hepatocellular carcinoma patients undergoing chemotherapy after hepatocellular carcinoma surgery. The reports are as follows:

Material and methods

Clinical data

A total of 97 patients hospitalized from March 2017 to June 2019 were enrolled as the research subjects. The patients underwent postoperative chemotherapy after hepatocellular carcinoma surgery. The researchers divided the targeted subjects into the control group (n=47) and the observation group (n=50). The study was approved by the hospital ethics committee.

Inclusive criteria and exclusive criteria

Inclusive criteria included: (1) Patients met the diagnostic criteria of hepatocellular carcinoma in *Oncology* (edited by Zhang Tianze) [10] and were diagnosed by pathological diagnosis; their imaging examination results were consistent with pathological diagnosis; (2) Patients aged between 18-65 years old; (3) Patients had clear mind and normal thinking, and were capable of listening, speaking, reading and writing characters. (4) Patients who voluntarily signed the informed consent.

The exclusive criteria included: (1) Patients with cardiovascular, cerebrovascular or other serious complications after surgery; (2) Patients with severe organ lesions or dysfunction; (3) Patients who had systemic infection postoperatively; (4) Patients with other primary malignant tumors; (5) Patients who underwent other anti-tumor treatments during chemotherapy; and

(6) Patients with grade III-IV anti-tumor drug toxicity during chemotherapy.

Methods

Routine nursing care was adopted for the control group patients, which included: (1) Patients were informed with the precautions after discharge; (2) Overview of chemotherapy drugs and treatment plan; (3) Brief introduction of the toxic side effects and coping methods during chemotherapy; (4) Precautions during chemotherapy; (5) Diet nursing during chemotherapy.

The observation group received the combination of 5A nursing intervention and the conventional nursing care. The specific measures were as follows: (1) Ask: a questionnaire was designed by nursing staff to communicate with patients 1 to 3 days after admission to collect patient information. The questionnaire included basic information, disease history, treatment history, smoking history, physical fitness, auxiliary examinations, disease diagnosis, treatment program, chemotherapy time, course of treatment, and questions about disease and treatment, etc. (2) Assessment: the assessment, which was based on the above questionnaire results, was conducted within 4-6 days by one responsible nurse and an intern nurse. Two assessments would be conducted during the intervention. The responsible nurse was in charge of the assessment and the intern nurse was responsible for filling in the assessment form. The assessment info included the patient's disease condition, medication, mental state, nutritional status, knowledge of chemotherapy, physical efficacy, sleeping quality, economic status, etc. (3) Advice: personalized suggestions were given by a responsible nurse according to the results of inquiry and evaluation. The suggestions included the explanation of disease related knowledge and medication guidance, observation of self-state, notification of quitting smoking, healthy diet and reasonable exercise. The responsible nurse corrected the inappropriate behaviors and advised the time interval and necessity of follow-up visits of patients in order to improve their compliance. (4) Assist: the problems found in the nursing care were sorted out in time within 2 to 3 weeks since the patient's admission. Timely communication was conducted with patients and their families via Wechat, QQ group and bedside card info. Time sensitive and concentrated

Table 1. Comparison of general data between two sets of subjects

General information	Observation group n=50	control group n=47	t/X^2	P
Gender				
Male	33	32	0.048	0.827
Female	17	15		
Age years $\overline{x} \pm s$	47.28±6.44	48.02±7.21	0.534	0.595
TNM staging				
Stage III	31	34	1.172	0.279
Stage IV	19	13		
Child Pugh staging				
Phase A	36	32	0.177	0.674
Phase B	14	15		

answers were provided to patients' questions to encourage them to interact in the classroom online or on-site. The prevention of chemotherapy complications, rehabilitation guidance and training, and basic preventive measures for chemotherapy were explained, and expert lectures and videos were organized to facilitate the acquisition of knowledge and interactive communication of patients. Meanwhile, patients could fully communicated with nursing staff and receive knowledge through the guidance of nursing staff in an actively transformation instead of passively receive. (5) Follow-up arrangement: The nurse in charge and the intern nurse followed up the patients by ways of WeChat, QQ, telephone, etc. and confirmed the time for patient's next follow-up visit. The frequency of follow-up was once a week, and each follow-up lasted 20-30 min. The propose of follow-up was to understand the patient's current situation and disease progression, and remind patients to take medicine on time, exercise properly, keep a healthy diet, keep up a good mood, return to visits on time, and provide timely answers to questions that arise during the follow-up. The patient's physical condition was assessed. In addition, the patient's mental state was assessed by professional psychologist every month or every other month, and the adverse psychological mood of the patient was timely communicated and channelized. At the same time, the nutritional status of patient was assessed by a nutritionist every month or every other month, and a personalized diet and nutrition plan was provided to improve the patient's physical condition.

Observation of indexes

(1) The Chinese version of the self-care efficacy scale was employed to assess the self-care efficacy of patients before nursing intervention and 3 months in post-intervention [11]. The scale consisted of 10 items, and the score of each item ranged from 10-40 points according to Likert 4. A higher score indicated a better self-care ability of the subjects. (2) SF-36 scale was employed to assess patients' life quality before nursing intervention and 3 months in post-intervention [12]. The scale included eight dimensions: Limited health role, Somatic function, Physical pain, Vitality, Social function, Limited emotional role, Mental health and General health. (3) The revised Piper Fatigue Scale was adopted to assess the cancer-related fatigue degree before intervention and 3 months in post-intervention [13]. The scale included 22 items and covered 4 dimensions of emotion, feeling, behavior and cognition. A score of 0 indicated no fatigue, 1 to 3 was considered as mild fatigue, 4 to 6 was moderate fatigue, and 7 to 10 represented as severe fatigue. (4) The nursing satisfaction scale formed by the hospital was adopted for assessment before intervention and 3 months in post-intervention. The scale included 4 dimensions of nursing skills, service attitude, health education and hospital environment, and each dimension score was ranged from 0 to 10. A higher score represented higher patient's satisfaction with nursing work.

Statistical analysis

Statistical software SPSS 22.0 was employed. The measurement data was expressed as ($\overline{x} \pm$ sd) and compared with t test; the enumeration data was expressed by percentage and compared with X^2. Statistically significance was accepted at P<0.05.

Results

General data comparison

Comparison of general data between the two sets of subjects presented as a non-signifi-

Table 2. Comparison of self-efficacy scores between the two groups in pre- and post-intervention periods (point, $\bar{x} \pm sd$)

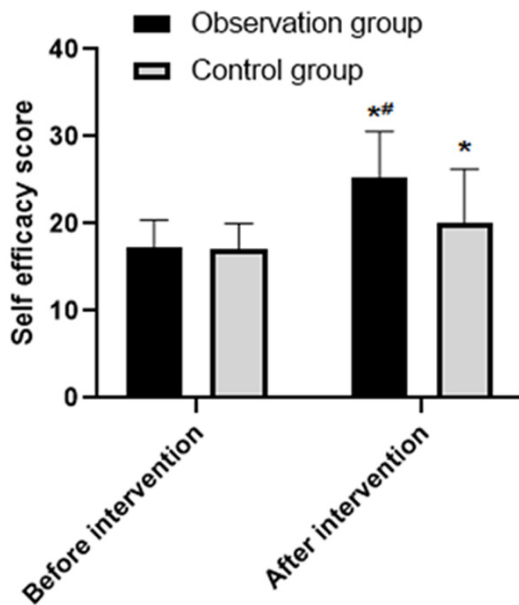| Group	Case	Before intervention	After intervention	t	P
Observation group	50	17.21±3.22	25.29±5.28	9.238	0.000
Control group	47	17.05±2.96	20.16±6.12	3.136	0.002
t	-	0.254	4.428	-	-
P	-	0.800	0.000	-	-

Figure 1. Comparison of self-care efficacy score between the two groups before and after intervention (Note: compared with before treatment, *P<0.05. compared with the control group, #P<0.05).

cant difference (P>0.05), as shown in **Table 1**.

Comparison of self-care efficacy between the two groups during pre- and post-intervention

The self-care efficacy of subjects in the two groups of patients post-intervention lifted significantly compared to that in the pre-intervention period (P<0.01), and the scores of the observation group in the post-intervention period was critically higher than that of the control group (P<0.01), as shown in **Table 2** and **Figure 1**.

Comparison of life quality between the two groups of patients in the pre- and post-intervention periods

The scores of living quality in the two groups of patients after intervention were elevated nota-

bly compared to that in the pre-intervention period (P<0.01), and the scores of the observation group in the post-intervention period were remarkably higher than those of the control group (P<0.01), see **Table 3**.

Comparison of cancer-related fatigue between the two groups

The cancer-related fatigue scores in the post-intervention period were raised significantly compared to that in the pre-intervention period (P<0.01), and the scores of the control group patients in the post-intervention period were increased dramatically compared to those in observation group (P<0.01), see **Table 4** and **Figure 2**.

Comparison of nursing satisfaction

The satisfaction scores of patients in observation group on nursing skills, service attitudes, health education, and hospital environment were significantly higher than those in the control group (P<0.01), as shown in **Table 5** and **Figure 3**.

Discussion

Cancer recurrence often peaks within 2 years after hepatocellular carcinoma resection, the cause of which is related to the small intrahepatic cancer lesions or residual cancer cells that still exist. It is difficult to completely prevent the spread of residual cancer cells in the liver although radical resection is clinically adopted. In addition, there is still a potential risk of multiple small centered lesions, which may lead to the recurrence of cancer after surgery [14, 15]. Postoperative chemotherapy is one of the commonly adopted treatment methods. However, the treatment program, postoperative pain and long-term drug use have imposed huge impact on patients' body and mental health, which seriously affect their living quality [16, 17].

Table 3. Comparison of living quality between two groups of patients in pre- and post-intervention periods (point, $\bar{x} \pm sd$)

Dimension	Observation group n=50		T	P	Control group n=47		t	P
	Before intervention	After intervention			Before intervention	After intervention		
Limited health role	63.18±3.16	71.20±4.64*	10.102	0.000	62.96±3.44	67.38±3.97	5.769	0.000
Somatic function	57.85±2.53	68.75±4.83*	14.136	0.000	58.40±3.67	63.41±5.10	5.466	0.000
Physical pain	61.07±3.72	70.29±3.75*	12.343	0.000	61.88±2.49	64.52±3.02	4.624	0.000
Vitality	70.83±4.67	78.65±4.13*	8.870	0.000	70.12±3.99	75.43±5.16	5.581	0.000
Social function	64.52±4.30	74.52±5.42*	10.220	0.000	63.98±5.38	69.42±4.27	5.430	0.000
Limited emotional role	65.39±3.97	75.63±3.98*	12.881	0.000	64.85±4.21	70.26±4.36	6.120	0.000
Mental health	61.42±5.62	74.20±4.65*	12.389	0.000	60.73±3.76	67.84±5.21	7.587	0.000
General health	68.59±6.12	76.84±6.11*	6.756	0.000	68.02±5.22	72.65±5.98	3.999	0.000

Note: compare with control group, *P<0.05.

Table 4. Comparison of cancer-related fatigue between the two groups (point, $\overline{x} \pm sd$)

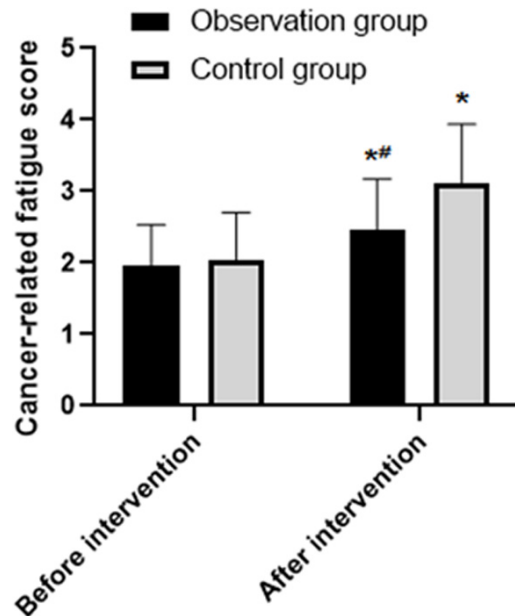| Group	Case	Before intervention	After intervention	t	P
Observation group	50	1.97±0.56	2.46±0.71	3.832	0.000
Control group	47	2.04±0.66	3.11±0.83	6.918	0.000
t	-	0.564	4.153	-	-
P	-	0.574	0.000	-	-

Figure 2. Comparison of cancer-related fatigue scores between the two groups (Note: compared with before treatment, *P<0.05. compared with the control group, #P<0.05).

The 5A nursing intervention mode was initially applied in the nursing work of smoking cessation patients in China. As the implementation of the care in smoking cessation clinic acquired successful effecst, the model has then extended to other diseases [18, 19]. According to scholars [16, 17], 5A nursing model plays a crucial role in the patients' prognosis by inspiring patients to actively overcome the disease and resolve their adverse psychological emotions in a timely manner, helping patients cope with the difficulties in life during the treatment process, and improving their confidence in rehabilitation.

In this study, the 5A nursing intervention was firstly applied to patients undergoing chemotherapy after hepatocellular carcinoma surgery. The outcome suggested that the self-care efficacy of subjects in both groups of patients in the post-intervention period lifted significantly compared to that in the pre-intervention period, and the scores of the observation-group in the post-intervention period was critically higher than that of the control-group. The scores of the living quality in both groups of patients after intervention was elevated notably compared to that in the pre-intervention period, and the scores of the observation group in the post-intervention period were remarkably higher than those of the control group. The cancer-related fatigue scores of the two groups during post-intervention were raised significantly compared to during pre-intervention and the scores in control group in the post-intervention period were significantly higher than those in observation group. These results, which are similar to those reported by scholars [20, 21], indicate that the application of 5A nursing intervention to patients undergoing chemotherapy after hepatocellular carcinoma surgery can effectively improve their self-care efficacy and living quality, and also improve their cancer-induced fatigue. The self-care efficacy, which refers to the degree of confidence in an individual's ability to complete a certain behavior, includes the self-attitude, self-confidence and self-healing ability [22, 23]. The patients' living quality, psychological and social adaptations can be measured by the self-care efficacy degree. Improving patients' sense of self-care efficacy can help promoting their awareness of the disease, improve negative emotions, establish treatment confidence, thus improving clinical treatment effects [24, 25]. The application of 5A nursing intervention can help to ameliorate patients' self-care efficacy and living quality by comprehensively understanding and evaluating patients' conditions, giving them targeted suggestions and positive guidance according to the assessment results. Meanwhile, the targeted and personalized interventions can critically reduce cancer-related fatigue in patients, which may also be an important factor for the improvement of their self-efficacy and living quality [26-28]. Besides, the satisfaction on nursing skills, service attitudes, health educa-

Table 5. Comparison of nursing satisfaction (points, $\bar{x}\pm sd$)

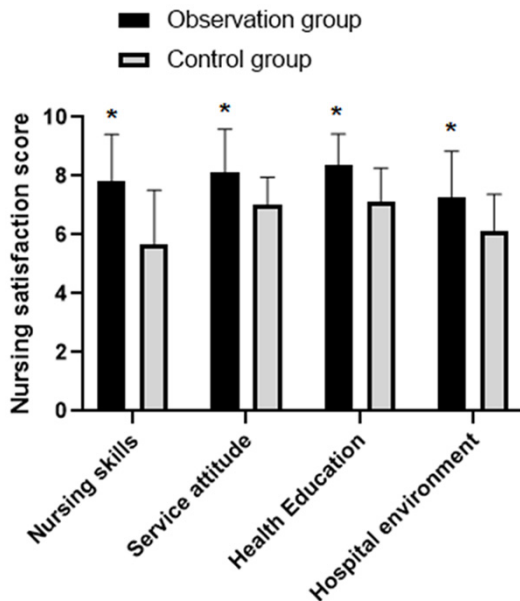| Group	Case	Nursing skills	Service attitude	Health Education	Hospital environment
Observation group	50	7.84±1.57	8.12±1.47	8.37±1.06	7.29±1.55
Control group	47	5.68±1.83	7.03±0.92	7.12±1.15	6.12±1.26
t	-	6.251	4.345	5.571	4.064
P	-	0.000	0.000	0.000	0.000

Figure 3. Nursing satisfaction score of the two groups (Note: compared with the control group, *P<0.05).

tion, and hospital environment in the observation-group were notably higher than those in control-group, suggesting that the 5A nursing intervention for patients undergoing postoperative chemotherapy after hepatocellular carcinoma surgery can effectively improve their satisfaction with nursing care, thereby improving the current tense nurse-patient relationship in China.

However, there are certain limitations that exist in this study due to the small number of patients included as well as a deficient in-depth analysis for the long-term prognosis of patients. Therefore, it is necessary to further expand the sample size and launch deeper research and analysis in subsequent studies.

In conclusion, 5A nursing intervention can ameliorate the self-care efficacy and living quality of patients undergoing postoperative chemotherapy after hepatocellular carcinoma surgery, and help relieving their cancer-related fatigue during treatment and improving their satisfaction with nursing care, which is worthy of clinical promotion and application.

Disclosure of conflict of interest

None.

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