

## Original Article

# Influence of individual nursing care on postoperative early recovery and negative emotions in primary liver cancer patients

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**Abstract:** Objective: Our aim was to investigate the influence of individual nursing care (INC) on postoperative recovery and negative emotions of primary liver cancer (PLC). Methods: A total of 104 patients with PLC surgery, admitted to Fourth Hospital of Hebei Medical University from January 2015 to March 2017, were selected and randomly divided into control group and experimental group with 52 cases in each group. Patients in control group simply received conventional nursing care interventions and patients in experimental group received INC on the basis of conventional nursing care. Postoperative recovery and negative emotions were compared between the two groups. Results: Postoperative exhaust time, peritoneal drainage time, ambulation time, and hospitalization time after nursing care in experimental group were significantly shorter than those in control group (all  $P < 0.001$ ). Levels of indirect bilirubin and direct bilirubin in experimental group were significantly lower than those in control group and serum albumin level was significantly higher than that of control group after nursing care (all  $P < 0.001$ ). Incidence of postoperative complications in experimental group (7.69%) was significantly lower than in control group (23.08%,  $\chi^2 = 4.73$ ,  $P < 0.001$ ). After nursing, Self-Rating Anxiety Scale and Self-Rating Depression Scale scores of negative emotional indicators in experimental group were significantly lower than those of control group (both  $P < 0.001$ ). Conclusion: INC could promote early recovery and reduce negative emotions after surgery in patients with PLC.

**Keywords:** Individuation nursing care, primary liver cancer, postoperative recovery, negative emotions

## Introduction

Hepatectomy is the first choice for treatment of primary liver cancer (PLC). It has longer treatment cycle and greater impact of physiological and psychological influence of patients [1]. Patients suffer great psychological pressures before and after surgery and cannot fully cooperate with treatment, thus affecting treatment effect and postoperative recovery [2]. Therefore, quality care for treatment of patients with PLC is extremely important. In recent years, individual nursing care (INC) model developed on the basis of conventional nursing care has been given more and more attention by medical staffs [3]. Compared with conventional nursing care, this kind of nursing mode focuses on patients and pays more attention to communication between nurses and patients. Patient psychological and physical health problems have been a concern. It has been increasingly

applied in elderly patients and patients with severe infections and other special needs. Clinical research has proven that implementation of INC for patients in the surgical cycle can effectively stabilize conditions and promote the postoperative physiological rehabilitation process compared with conventional nursing care [4]. However, there has not been a final conclusion of its influence on postoperative recovery of patients with PLC. Therefore, this research aimed to investigate influence of INC on postoperative early recovery and negative emotions of PLC.

## Materials and methods

### General information

This study was approved by the Ethics Committee of Fourth Hospital of Hebei Medical University and informed consent was obtained. A

# Influence of INC on postoperative early recovery and negative emotions in PLC

**Table 1.** Comparison of the basic data of two groups of patients

Group	Sex (male/female)	Age (years old)
Control group (n=52)	31/21	58.38±2.01
Experimental group (n=52)	30/22	58.46±2.15
P	0.842	0.845
t/ $\chi^2$	0.040	0.196

total of 104 PLC radical surgery patients were selected from those admitted in the Fourth Hospital of Hebei Medical University from January 2015 to March 2017.

Inclusion criteria: 1) Patients clinically diagnosed as PLC with radical surgery indications and agreed to the surgery; 2) Patients not associated with acute and chronic kidney disease; 3) Patients not associated with severe immune system disease; 4) Patients that voluntarily participated in this research and signed informed consent form [5].

Exclusion criteria: 1) Patients with combined renal insufficiency; 2) Patients with mental disorders and unstable mental status; 3) Patients in severe infections combined with other tissues and organs; 4) Patients unable to cooperate with normal nursing care or related examinations; 5) Patients who failed to perform surgery or radical surgery.

All of the patients were equally divided into a control group (52 cases) and experimental group (52 cases) by the random number method.

## Methods

Patients in control group were given conventional nursing care from the date of admission to the day before discharge: 1) Life indicators such as body temperature, blood pressure, respiratory rate, and liver function were observed and recorded; 2) Patient medication and nutritional status were paid close attention and recorded; 3) Guided patients to perform abdominal breathing and each inhalation followed by coughing 3 times which helped patients to remove sputum in the correct way; 4) Made sure ward ventilation and disinfection worked.

Patients in experimental group were given INC based on conventional nursing care of control group. Details were as follows. 1) Explanation

of health knowledge: to explain the cause of disease, treatment options, and expected effect of surgery. At the same time, to emphasize diet taboos. 2) Humanistic psychological nursing care: to communicate positively with patients through good communication skills and provide utmost humanistic care while respecting individual privacy and individual differences based on the understanding of detailed patient personal information [6]. 3) Comprehensive preoperative nursing care: to communicate with patients actively before surgery by listening, comforting and encouraging patients; making sure of preoperative gastrointestinal preparation of liver cancer; communicating with the surgeon and set up emergency plans [7]. 4) Meticulous intraoperative nursing care: cooperating with doctors to complete the surgery process; cleaning up medical wastes generated during surgery timely and ensuring cleanliness of the surgical environment. If an emergency occurs in the surgery, corresponding nursing measures should be taken according to the preoperative emergency plan. 5) Liberalized postoperative rehabilitation nursing care: in addition to regular monitoring and nursing, INC programs were performed according to patient postoperative specific rehabilitation conditions combined with a balanced nutritional diet and regular rehabilitation activities to enhance patient mental state. 6) Postoperative analgesia and training care: for postoperative patients with liver pain, nursing staff shall assist and guide patients to adopt supine self-abdominal breathing by holding breath for 5 seconds after deep inspiration. Within 3 days after surgery, patients were assisted with a stand-up exercise and 8-10 minutes meditation every 2 hour interval. Patient lower limbs were regularly massaged to prevent lower extremity venous thrombosis.

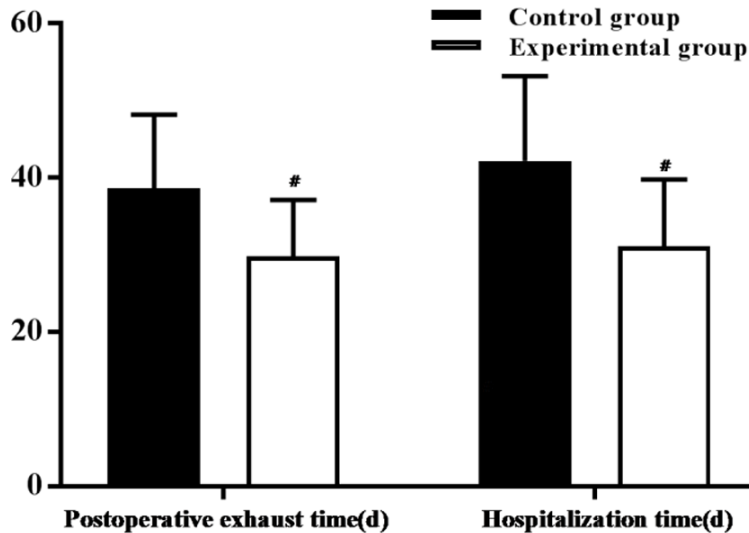
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## Observation indexes

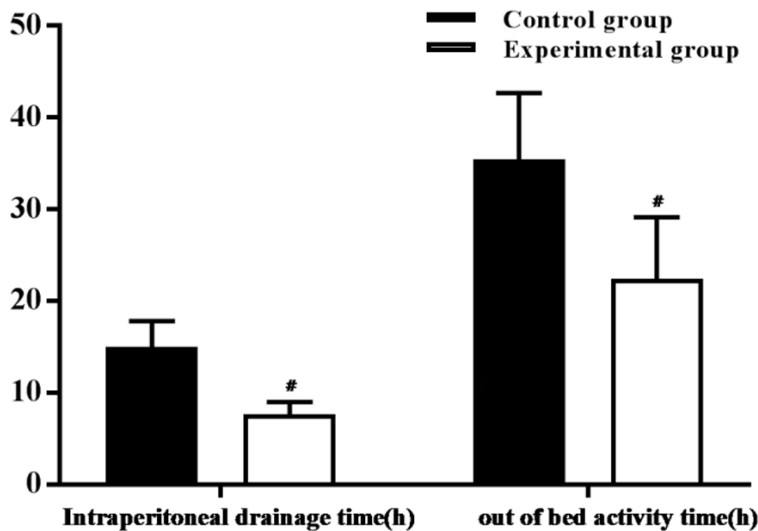
Observation indexes were as follows. 1) Hospitalization time, exhaust time, defecation time, and ambulation time were compared between the two groups. 2) Liver function indexes such as indirect bilirubin, direct bilirubin, and serum albumin levels one month before and after the start of nursing care were compared between the two groups of patients. 3) Complication rates of postoperative vomiting, diarrhea, throat swelling, thrombosis, and

**Table 2.** Comparison of postoperative prognostic indicators in two groups of patients ( $\bar{x} \pm sd$ )

Group	Postoperative exhaust time (d)	Peritoneal drainage time (h)	Out of bed activity time (h)	Hospitalization time (d)
Control group (n=52)	38.60±9.56	15.02±2.78	35.42±7.25	42.16±11.03
Experimental group (n=52)	29.75±7.40	7.63±1.34	22.40±6.76	31.11±8.67
t	5.28	17.27	9.47	5.68
P	<0.001	<0.001	<0.001	<0.001



**Figure 1.** Comparison of exhaust time between the two groups and stay in hospital. The control group received routine nursing and experimental group used personalized nursing care based on routine nursing. Compared with the control group, hospital stays in the experimental group and postoperative exhaust times were shorter than the control group. Compared with the control group, #P<0.05.



**Figure 2.** Comparison of abdominal draining between the two groups, the time of bed activity. Compared with the control group, intraoperative drainage time and bed activity times were shorter than the control group. Compared with the control group, #P<0.05.

infection, etc. were compared between the two groups. 4) Anxiety and depression scores of the two groups one-month before and after nursing care were compared and evaluated. Anxiety and depression scores were evaluated by Self-Rating Anxiety Scale (SAS) and Self-Rating Depression Scale (SDS), respectively [8]. The critical value was 50 points and 53 points, respectively. Beyond critical value, higher scores indicated more negative emotions.

*Statistical method*

All statistical data were analyzed by SPSS21.0 software. Counting data are expressed by mean  $\pm$  standard deviation ( $\bar{x} \pm sd$ ). Paired t-test was used to compare data before and after within the group, such as bilirubin and albumin. For comparison of data at the same point between the groups, we used t-test of two independent samples. All counting data were represented by number of occurrences (rate, (n, %)) and difference between the groups was compared with  $\chi^2$  test. P<0.05 was considered a significant difference.

**Results**

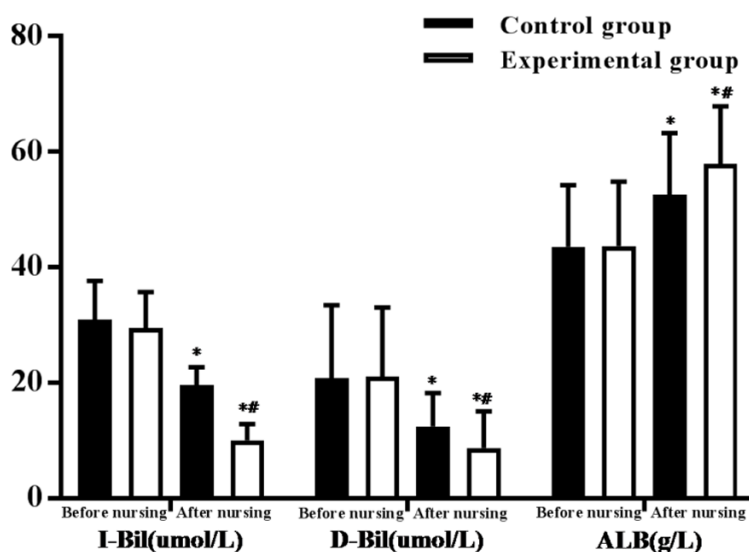
*Comparison of basic data of two groups of patients*

Liver function of the two groups of patients reached

**Table 3.** Comparison of liver function indexes before and after nursing in two groups of patients ( $\bar{x} \pm sd$ )

Group	Control group (n=52)	Experimental group (n=52)	t	P
Indirect bilirubin ( $\mu\text{mol/L}$ )				
Before nursing	30.87 $\pm$ 6.76	29.53 $\pm$ 6.20	1.05	0.294
After nursing	19.55 $\pm$ 3.15*	10.04 $\pm$ 2.76*	16.37	<0.001
Direct bilirubin ( $\mu\text{mol/L}$ )				
Before nursing	20.80 $\pm$ 12.65	21.02 $\pm$ 11.98	0.09	0.927
After nursing	12.46 $\pm$ 5.78*	8.67 $\pm$ 6.35*	3.18	<0.001
Serum albumin ( $\mu\text{mol/L}$ )				
Before nursing	43.54 $\pm$ 10.70	43.70 $\pm$ 11.15	0.07	0.940
After nursing	52.54 $\pm$ 10.70*	57.92 $\pm$ 9.98*	2.60	<0.001

Note: Compared with before nursing, \*P<0.05.



**Figure 3.** Comparison of liver function indexes between two groups before and after nursing. Indirect bilirubin, direct bilirubin, and serum albumin levels before treatment in both groups showed no significant difference. After nursing, levels of indirect bilirubin and direct bilirubin in experimental group were significantly lower than those in control group and serum albumin level was significantly higher than that in control group. Compared with before nursing, \*P<0.05; compared with the control group, #P<0.05. TBil, total bilirubin; ALT, alanine aminotransferase; AST, aspartate aminotransferase.

grade A before surgery and all patients underwent radical hepatectomy. The control group consisted of 31 males and 21 females, aged between 45-69 years old with average age of (58.38 $\pm$ 2.01) years old. The experimental group consisted of 30 males and 22 females, aged between 44-69 years old with average age of (58.46 $\pm$ 2.15) years old. There was no statistically significant difference in gender (P=0.842) and age (P=0.845) between the two groups, hence the two groups were comparable. See **Table 1**.

*Comparison of postoperative recovery indicators*

Postoperative exhaust time, peritoneal drainage time, ambulation time, and hospitalization time in experimental group was significantly shorter than those in control group (all P<0.001). See **Table 2**, **Figures 1** and **2**.

*Comparison of liver function indexes between the two groups of patients before and after nursing care*

Comparison of indirect bilirubin, direct bilirubin, and serum albumin levels before nursing care in both groups showed no significant difference (all P>0.05). After nursing, levels of indirect bilirubin and direct bilirubin in the experimental group were significantly decreased compared with those in the control group and serum albumin level was significantly increased compared with control group (P<0.001). See **Table 3** and **Figure 3**.

*Comparison of incidence of postoperative complication in two groups of patients*

Incidence of complications such as vomiting, diarrhea, throat swelling, thrombosis, and infection was 7.69% in the experimental group. The total complication rate in control group was 23.08%. The exper-

imental group was significantly lower than that in the control group ( $\chi^2=4.73$ , P<0.001). See **Table 4**.

*Comparison of SAS and SDS scores in two groups of patients before and after nursing care*

There was no significant difference in scores of SAS and SDS between the two groups before nursing care (both P>0.05). After nursing, SAS scores and SDS scores of the experimental

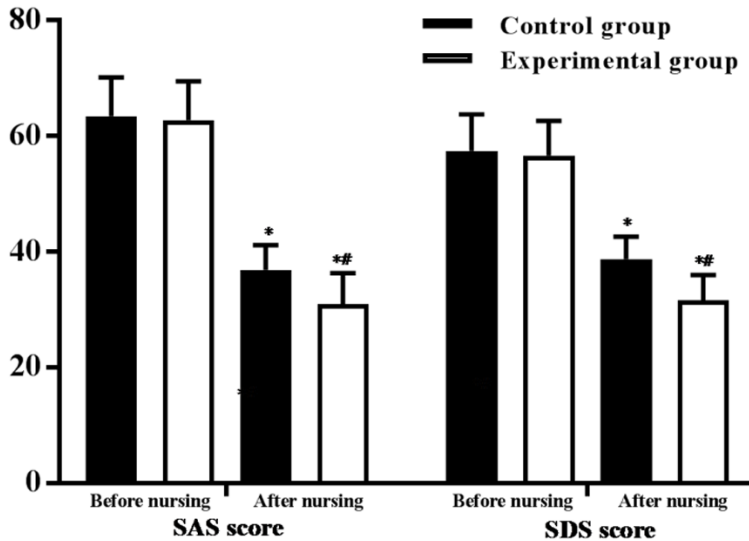
**Table 4.** Comparison of incidence of complication between two groups of patients (n, %)

Groups	Control group (n=52)	Experimental group (n=52)	$\chi^2$	P
Electrolyte disturbance	2 (3.85)	0	3.92	0.015
Diarrhea	4 (7.69)	2 (3.85)	2.71	0.021
Hepatic injury	2 (3.85)	1 (1.92)	4.25	0.035
Thrombus	1 (1.92)	0	3.45	0.021
Pneumonia	3 (5.77)	1 (1.92)	4.10	0.016
Total	12 (23.08)	4 (7.69)	4.73	<0.001

**Table 5.** Comparison of SAS and SDS scores before and after nursing care in two groups of patients ( $\bar{x} \pm sd$ )

Groups	Control group (n=52)	Experimental group (n=52)	t	P
<b>SAS score</b>				
Before nursing	63.40±6.75	62.78±6.70	0.47	0.639
After nursing	36.87±4.29*	30.98±5.33*	6.21	<0.001
<b>SDS score</b>				
Before nursing	57.40±6.38	56.60±6.02	0.66	0.512
After nursing	38.76±3.85*	31.56±4.38*	8.90	<0.001

Note: SAS, Self-Rating Anxiety Scale; SDS, Self-Rating Depression Scale. Compared with that before nursing, \*P<0.05.



**Figure 4.** Comparison of SAS and SDS scores before and after nursing between two groups of patients. There was no significant difference in SAS and SDS scores between two groups before nursing. After nursing, SAS scores and SDS scores in the test group were significantly lower than those in the control group. Compared with before nursing, \*P<0.05; compared with the control group, #P<0.05. SAS, Self-Rating Anxiety Scale; SDS, Self-Rating Depression Scale.

group were significantly lower than control group (both P<0.001). See **Table 5** and **Figure 4** for details.

**Discussion**

The incidence of PLC is sudden and complex. In the course of treatment, psychological stress is caused by rapid changes of patient condition combined with lack of understanding of the disease and physical discomfort during surgery, producing negative emotions which affect the follow up treatment process and treatment effect [9]. The conventional nursing model in patients with such disease often appears with problems of preoperative anxiety and poor postoperative recovery. The main reason is proceduralization of the conventional nursing model, reflected by lack of communication with patients and their families. Psychological problems of patients have been ignored [10]. The INC model in psychological care has made corresponding improvements. Some scholars have pointed out that INC could actively promote postoperative recovery, effectively stabilize the psychological process of patients during treatment, and improve coordination of treatment which is of great significance for treatment of PLC [11].

In recent years, the INC model derived from the rehabilitation nursing system has shown significant effectiveness in treatment of malignant tumor diseases [12]. Compared with conventional nursing care model, the INC model has obvious advantages in areas of promoting patient physiological and psychological rehabilitation [13]. The INC process is divided into three parts, namely, preoperative nursing care, intraoperative nursing care, and postoperative nursing care [14]. Preoperative nursing care process includes health knowl-

edge seminars to enhance patient awareness of self-health protection, is concerned with patient psychological state, and gives humanistic care [14]. Through mild and relaxed interaction such as reading newspapers, accompanied by a walk to release pre-operative psychological pressure, it actively relieves negative emotions caused by surgical pressure. Therefore, patients could quickly establish confidence in facing surgical treatment [15]. Intraoperative nursing care is the meticulous process of ensuring the safety of surgical environment and reducing certain surgical risks through a full range of disinfection of surgical instruments [16]. Postoperative nursing care is focused on liberalization. Individuation postoperative care and rehabilitation plans are developed based on the specific circumstances of patients. Patients expressing psychological loneliness after surgery obtain psychological recognition and affirmation and negative emotions caused by postoperative wound discomfort and adverse drug reactions are eliminated. Therefore, postoperative nursing care reduces the incidence of postoperative complications to a certain extent [17]. Communication between nurses and patients is key through the entire process of INC. While nurses conduct verbal communication, they encourage patients through use of non-verbal forms such as eyes and smiles, which plays a positive role in maintaining good relationships between nurses and patients and improves patient nursing coordination [18]. In addition, communication between nurses and family members has also reduced pressure, enabling patients to receive more family support and care and promote their psychological recovery after surgery [19]. Ward atmosphere is also a concern in nursing care. As nurses focus on the emotions of all patients in the ward, a good ward atmosphere is established, effectively promoting rehabilitation of patients [20]. The results of this research showed that exhaust time, peritoneal drainage time, ambulation time, and hospitalization time in the experimental group were significantly shorter than those in the control group. Indicators of liver function of TBil, ALT and AST were significantly lower than those of the control group. Incidence of complications was only 7.69%, significantly lower than that of the control group. Our results demonstrate that comprehensive INC could effectively improve the effect of treatment, promote the process of

rehabilitation, and improve relationship between nurses and patients. However, due to lack of systematic training of nursing staffs in the research process, there was a large discrepancy between individual nurses and a certain degree of arbitrariness. Therefore, a normal nursing effect of some patients existed. Due to the lack of standardization of nursing procedures, personnel arrangement has not been optimized and the cost of nursing has not been effectively reduced. In the future of INC, we shall focus on unification and standardization of the process, reducing the cost of nursing, and improving nursing efficiency.

In summary, compared with conventional nursing care, INC can effectively stabilize and eliminate negative emotions of patients during treatment and promote postoperative physical rehabilitation. INC is worthy of clinical promotion.

### Disclosure of conflict of interest

None.

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