

## **Application of traditional Chinese medicine pattern-based clinical nursing for gastric cancer patients during chemotherapy.**

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### **Abstract**

**Objective:** To evaluate the clinical efficacy and safety of traditional Chinese medicine pattern-based clinical nursing care for patients diagnosed with gastric cancer throughout the chemotherapy.

**Methods:** A total of 160 gastric cancer patients receiving chemotherapy were randomly divided into the experimental (n=80) and control groups (n=80). Patients in the control group received conventional nursing care and their counterparts in the experimental group were administered with traditional Chinese medicine pattern-based clinical nursing care.

**Results:** Patients in the experimental group yielded higher clinical efficacy compared with their counterparts in the control group. Relevant symptoms were significantly mitigated and considerably higher degree of satisfaction was obtained in the experimental group than those in the control group (all  $P < 0.01$ ).

**Conclusion:** Clinical nursing care in the traditional Chinese medicine pattern is applicable for gastric cancer patients throughout the chemotherapy, which yields high clinical efficacy and ensured safety.

**Keywords:** Traditional Chinese medicine, Clinical nursing care, Pattern, Gastric cancer, Chemotherapy.

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### **Introduction**

Gastric cancer is the third most common cause leading to cancer-related mortality worldwide and it remains challenging to cure gastric cancer in the Western countries, primarily because a majority of gastric carcinoma patients present with advanced stage [1]. In the United States, gastric malignancy is currently the 15<sup>th</sup> most common cancer. Early-stage gastric cancer is characterized with no associated symptoms. Nevertheless, patients with incidental complaints are suspected with early gastric cancer. Most symptoms of gastric cancer occur in the advanced stage. All physical signs of gastric cancer are present in late events [2]. Gastric cancer is invariably too advanced for therapeutic procedures. Common therapies for stomach cancer mainly include surgery, chemotherapy, and/or radiation therapy. Novel approaches such as biological therapy and improved patterns of current methods are being studied in clinical trials.

Clinical nursing for gastric cancer patients, especially during the chemotherapy, remains debated. At present, the Western medicine pattern of clinical nursing care when applied to treat gastric cancer and improve quality of life is dominantly employed [3]. Nevertheless, the use of clinical nursing care delivered in traditional Chinese medicine pattern for gastric cancer patients during chemotherapy has been rarely reported. Besides, clinical efficacy and safety of this mode upon the patients' physical constitution, survival rate and quality of life

has not been reported. Hence, a total of 160 patients diagnosed with advanced gastric cancer between January 2015 and October 2016 were recruited in this study. Half of these patients received conventional nursing care and the remaining cases underwent clinical nursing care implemented in traditional Chinese medicine pattern. Clinical efficacy and therapeutic safety were statistically compared between two groups.

### **Materials and Methods**

#### **Baseline data**

In total, 160 patients diagnosed with advanced stage gastric cancer were enrolled in this clinical trial. There were 100 male and 60 female, aged ranging from 35 to 76 years old with a median age of  $(59.1 \pm 11.2)$  years. All participants were diagnosed according to the classification and diagnostic criteria for gastric cancer (WHO 2010 edition). Among them, 111 patients were diagnosed with adenocarcinomas, 25 with gastrointestinal carcinoid tumors and 24 with gastrointestinal stromal tumors. All participants were randomly divided into the experimental group (n=80; 53 male and 27 female) and control group (n=80; 47 male and 33 female). No statistical significance was observed in terms of the baseline data between two groups (all  $P > 0.05$ ). Those with severe nervous

and mental illness or chronic diseases were excluded from this investigation.

### ***Clinical nursing care***

In the control group, gastric cancer patients received conventional nursing care during chemotherapy. On the basis of conventional nursing care, those in the experimental group were additionally administered with traditional Chinese medicine pattern-based clinical nursing care. First, all patients were classified into 7 types according to the Diagnosis and Treatment Standard for Gastric Cancer proposed in 2010 including weakness of the spleen and the stomach, insufficiency-cold of the spleen and stomach, phlegm dampness, deficiency of both Qi and the blood, stagnation of Qi plus deficiency of blood, disharmony between the liver and stomach, and gastric fever plus impairment of Yin. Second, based upon the outcomes of differentiation of symptoms and signs, all patients were administered with individualized clinical nursing care in traditional Chinese medicine. Meantime, the nursing care, therapeutic approach and clinical symptoms were explicitly recorded throughout the nursing care procedures. Third, evaluation of nursing care, implementation of physician's advice, nursing management and healthcare guidance were explicitly accomplished upon 1, 2, 3, 4-8, 9 and 10 days after hospitalization, respectively. Fourth, prior to chemotherapy, potential symptoms, such as gastric distension, nausea, vomiting, loss of appetite, hypodynamia, acid regurgitation, dizziness, constipation and diarrhea were carefully attended and prevented. Moreover, the nursing staff were responsible for attending the daily life, observation of patient's conditions, guidance for diet and medication use, emotional nursing and multiple traditional Chinese medicine-based therapies and interventions were implemented during the period of chemotherapy, such as auricular acupoint with seeds, moxibustion, acupuncture point massage and pasting, enema of traditional Chinese medicine and foot bath in traditional Chinese medicine. The patients were advised to have a healthy diet. The portion of food in each meal was decreased, whereas the frequency of daily meals was increased. The diet composition was determined based on the classification type of patients.

### ***Evaluation criteria***

#### **Classification standard of symptoms and physical signs:**

After professional training, the nurses were responsible for classification and evaluation of the symptoms and physical signs in gastric cancer patients at 1 and 5 days after chemotherapy. According to the Guidelines for Clinical Trials of new traditional Chinese medicines, clinical symptoms and physical signs included stomach pain, stomach distention, belching, vomiting, nausea, diarrhea, constipation, emaciation, insomnia, hypodynamia and emotional depression. The severity of clinical symptoms and physical signs were scored ranging from 0 to 6. The lower score indicated the higher efficacy of clinical nursing care.

**Questionnaire of degree of satisfaction of nursing care:** The contents and items of the questionnaire were designed by the chief researchers. The total score of the questionnaire was 50. The score of each question ranged from 5 to 1, representing very satisfied, satisfied, moderately satisfied, dissatisfied and very dissatisfied. The higher score represented higher degree of satisfaction of the nursing care. The quality control of research was jointly supervised by the department director, head nurse and responsible nurses.

### ***Evaluation criteria of clinical efficacy***

Clinical efficacy was assessed according to the equation: clinical efficacy of system of traditional Chinese syndrome=(integral score of system of traditional Chinese syndrome after chemotherapy-integral score of system of traditional Chinese syndrome before chemotherapy) × 100%. A reduction of ≥ 70% in integral score of system of traditional Chinese syndrome was defined as the symptoms were significantly eased after treatment, a decrease of 30% to 70% in integral score indicated slight alleviation of clinical symptoms after treatment, and a reduction of <30% in integral score represented clinical symptoms were not mitigated or even aggravated.

### ***Statistical analysis***

SPSS17.0 software package (SPSS Inc., Chicago, IL) was utilized for statistical analysis in this study. Measurement data were analysed by independent sample t-test and enumeration data were statistically compared by  $\chi^2$  test. Normal distribution was analysed by t-test. Paired data were statistically assessed by paired t-test. The ratio was analysed by chi-square test.  $P < 0.05$  was considered as statistical significance.

## **Results**

### ***Integral score of physical constitution after chemotherapy***

At 1, 2, 3, 4, 5 and 6 days after chemotherapy, integral scores of the physical constitution were calculated and statistically compared between the experimental and control groups. There was no statistical significance in the integral scores at 1 and 2 days following chemotherapy between two groups (both  $P > 0.05$ ). However, the integral scores at 4, 5 and 6 days after treatment were  $15.68 \pm 9.23$ ,  $11.55 \pm 7.12$  and  $7.85 \pm 6.13$  in the experimental group, which were significantly lower compared with  $32.09 \pm 7.81$ ,  $32.02 \pm 10.03$  and  $33.33 \pm 9.51$  in the control group (all  $P < 0.05$ ), as shown in Table 1.

### ***Evaluation of clinical efficacy***

In the experimental group, 64 patients reported that the therapeutic regime was significantly effective and 2 obtained effective treatment with an overall effective rate of approximately 83.3%, which was considerably higher compared with 43.3% reported in the control group ( $\chi^2=6.267$ ,  $P=0.013$ ). Ten cases receiving traditional Chinese medicine

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pattern-based clinical nursing care yielded no clinical efficacy, and up to 34 in the control group, as illustrated in Table 2.

### Assessment of degree of satisfaction

All patients in both groups were required to complete the questionnaire regarding the assessment of degree of satisfaction. In the experimental group, a total of 75 patients

were satisfied about the clinical nursing care implemented in traditional Chinese medicine pattern with an overall satisfied rate up to 93.3%. In the control group, merely 53 cases were satisfied about the conventional nursing care with an overall satisfied rate of 66.7%. The satisfied rate significantly differed between the experimental and control groups ( $\chi^2=6.667$ ,  $P=0.021$ ), as revealed in Table 3.

**Table 1.** Comparison of integral score of physical constitution between two groups.

Group	1 day after chemotherapy	2 days after chemotherapy	3 days after chemotherapy	4 days after chemotherapy	5 days after chemotherapy	6 days after chemotherapy
Experimental group (n=60)	21.87 ± 9.57	21.30 ± 9.52	19.81 ± 9.85	15.68 ± 9.23	11.55 ± 7.12	7.85 ± 6.13
Control group (n=60)	22.47 ± 5.92	24.37 ± 5.71	29.48 ± 6.66*	32.09 ± 7.81*	32.02 ± 10.03*	33.33 ± 9.51*
t	-0.292	-1.510	-4.454	-7.423	-9.095	-12.290
P	0.771	0.138	0.000	0.000	0.000	0.000

Note: \*denotes statistical significance between two groups.

**Table 2.** Comparison of clinical efficacy between two groups.

Group	Evaluation of clinical efficacy			Overall effective rate (%)
	Significantly effective	Effective	Non-effective	
Experimental group (n=80)	64	2	14	83.3%*
Control group (n=80)	32	2	46	43.3%

Note:  $\chi^2=6.267$ ,  $P=0.013$

**Table 3.** Comparison of degree of satisfaction between two groups.

Group	Satisfied (n/%)	Dissatisfied (n/%)
Experimental group (n=80)	75/93.3%	5/6.7%
Control group (n=80)	53/66.7%	27/33.3%

Note:  $\chi^2=6.667$ ,  $P=0.021$ .

## Discussion

For patients suffering from different stages of gastric cancer, different therapies with varying intensities should be implemented. Chemotherapy is considered as one of the vital therapies against gastric cancer. However, it is likely to induce drug toxicity and adverse events. It may destroy the normal cells while killing the tumor cells, which probably lead to adverse events, severe complications and even death of the patients [4-7]. Previous investigations [8-10] have demonstrated that effective establishment of the pattern and workflow of clinical nursing care promotes the effective and convenient operation for nurses, guarantee the operation of the nursing procedures and timely identify the workflow defects. Meantime, modified clinical nursing care pattern can also allow for rapid understanding and learning of the nursing standard by the nurses and physicians, which significantly

decreases the risk of mishandle and errors. More importantly, scientific clinical nursing care pattern can greatly reduce the length of hospital stay and enhance the quality and degree of satisfaction of the nursing care service.

At present, Western medicine mode-based nursing care has been widely applied for cancer patients. Nevertheless, nursing care delivered in traditional Chinese medicine pattern has been rarely implemented. The core value of traditional Chinese medicine treatment is to maintain the clinical efficacy and reduce the adverse events occurring during the therapeutic procedures as possible [11]. Currently, traditional Chinese medicine has been initially applied to treat multiple categories of malignancies in clinical settings. Previous studies have demonstrated that traditional Chinese medicine therapy can significantly alleviate the symptoms and signs, enhance the quality of life and even prolong the survival time of the cancer patients.

Thus, in this investigation, traditional Chinese medicine pattern-based clinical nursing care was delivered for gastric cancer patients and the results demonstrated that traditional Chinese medicine pattern-based nursing care was effective and safe for the nursing care for gastric cancer patients throughout the chemotherapy. Clinical nursing care in traditional Chinese medicine pattern has explicit target and high guidance. It functions to implement the nursing care procedures in the form of graph and table, which makes the nursing care service

organized and fluent. Effective and rational nursing care workflow may significantly reduce the risk of errors, shorten the length of hospital stay and enhance the quality of nursing care. Prior to the establishment of the traditional Chinese medicine pattern-based clinical nursing care, literature review was performed, expert panel was discussed and the concept of evidence-based medicine was investigated. Based upon the full preparation, the routing table of clinical nursing care in traditional Chinese medicine pattern was jointly determined by the department panel. Baseline data of the enrolled patients were collected and restored by the responsible nurses. After enrolment, all participants were classified into different constitution types defined by traditional Chinese medicine theory based upon the differentiation of symptoms and signs. Subsequently, individualized nursing measurements were delivered based upon the constitution types. Time was defined as the cross axis, and the symptoms, characteristic nursing care in traditional Chinese medicine pattern, healthcare guidance, diet therapy and daily life were regarded as the longitudinal axis to thoroughly establish the standardized clinical nursing care procedures for gastric cancer patients in this investigation. Along with the proceeding of nursing care procedures, the finished items were marked in blue label, unfinished items were marked in red and the yellow signs indicated irregular events occurred in this patient. Then, the nurses ought to monitor the physical conditions, analyse the causes and deliver corresponding treatment. During the shifting, the nurses should emphasize the patient to the next nurses on duty. The evaluation procedures were mainly implemented by the head nurse. The head nurses should supervise the implementation of nursing measurements and healthcare education daily. Based upon the collected information, they ought to deliver corresponding adjustment and solutions to counter the problems in a timely manner. In addition, clinical nursing care in traditional Chinese medicine pattern contributes to strengthen the communication between the nurse and patient, enhance the working efficiency, maintain the quality of each procedure and provide timely and effective nursing care for the patients in need. Dynamic and seamless communication can significantly prevent the incidence of hidden danger, enhance the nursing quality and clinical efficacy and achieve optimal therapeutic effect.

In this study, the holistic theory of traditional Chinese medicine and the concept of differentiation of symptoms and signs are the core values of the novel pattern nursing care. Patients in the experimental group were administered with auricular acupoint by seeds, acupuncture and massage, foot bath in traditional Chinese medicine and dietary therapy based upon the differentiation of symptoms and signs, which effectively alleviated the clinical symptoms during chemotherapy. Prior to nursing care delivery, the physicians and nurses should explicitly inform the details with the patients, deepen their understanding of subsequent nursing care service and make full preparations. These interventions collectively enhanced the degree of satisfaction of the nursing care service delivered in traditional Chinese medicine pattern throughout the chemotherapy procedures.

The success of this novel pattern of clinical nursing care is subject to influence from complex factors, such as the professional personnel, medical equipment, financial fund, the nursing concept, force of implementation and the degree of cooperation between the physicians and nurses [12-15]. Moreover, the patient's understanding and cooperation of the nursing procedures also play a role in the success of nursing interventions. Several limitations should be acknowledged in this study. First, clinical nursing care delivered in traditional Chinese medicine pattern has been rarely applied for gastric cancer patients during chemotherapy. Subsequent investigations with a larger sample size are urgently required to validate the clinical outcomes. Moreover, certain patients are not applicable for this nursing pattern. Prior to nursing care and treatment, the patients should be classified into different constitution types based upon the differentiation of symptoms and physical signs. Then, individualized nursing invention can be implemented according to the physical constitutions.

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