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Technical Note

Effects of palliative nursing care based on knowledge, attitude and practices theory on advanced gastric cancer patients

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Abstract: We aim to observe the nutrition condition and pain level in advanced gastric cancer patients who receive chemotherapy, and to assess the influence of palliative nursing care based on knowledge, attitude and practices (KAP) theory on them. Eighty patients were enrolled and classified into two groups, with 40 cases in each group. In addition to chemotherapy, routine nursing was given in the control group, whereas the observation group received KAP theory-based palliative nursing care. Intervention was performed for 3 months. The results indicate that the levels of prealbumin, haemoglobin and body mass index in both groups were higher after intervention than those before intervention, especially in the observation group ($p<0.05$). The patient-generated subjective global assessment and visual analogue scale scores in the two groups after intervention were lower than those before intervention, and they were markedly lower in the observation group ($p<0.05$). As compared to those before intervention, the two groups had lower self-rating depression scale and self-rating anxiety scale scores after intervention, and the two scores were noticeably lower in the observation group ($p<0.05$). Both groups had higher scores of physical function, social function, cognitive function, emotional function, role function and general health after intervention compared to those before intervention, particularly in the observation group ($p<0.05$). Thus, KAP theory-based palliative nursing care can effectively ameliorate the nutritional status, reduce the pain level, improve the negative emotions, and enhance the living quality of patients with advanced gastric cancer.

Keywords: gastric cancer; chemotherapy, knowledge, attitude and practices theory, palliative nursing care

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INTRODUCTION

Gastric cancer is a malignancy originating from gastric mucosal cells, and it is usually asymptomatic in the early stage so some patients are in the late stage at the time of diagnosis, with limited treatment options [1]. Chemotherapy is a vital treatment means for advanced gastric cancer. Chemotherapy drugs can effectively destroy tumour deoxyribonucleic acid to inhibit tumour cell replication, relieve the condition of disease and prolong the survival of patients [2]. However, gastric cancer and chemotherapy can cause pain in patients, resulting in such negative emotions as anxiety and depression, and in malnutrition due to decreased food intake and ultimately in shortening the survival time of patients [3]. About 40% of cancer patients die of malnutrition and complications caused by malnutrition [4]. Therefore, improving the nutritional status and alleviating the pain of advanced gastric cancer patients undergoing chemotherapy are conducive to prolonging the survival of the patients.

At present, gastric cancer patients undergoing chemotherapy mainly receive routine nursing in clinical practice and the patient's nutrition condition and living quality can be improved by diet guidance and health education [5]. However, routine nursing is less targeted, and the patients are less enthusiastic in nursing, leading to a poor nursing effect. Knowledge, attitude and practices (KAP) theory is a behavioural intervention theory which determines benign health behaviours by extracting knowledge, and developing attitude and behaviour, thereby ameliorating clinical symptoms and improving the living quality of patients [6]. Palliative nursing care is a kind of symptomatic nursing on patients with physical symptoms and pain [7]. According to Osborne et al. [8], palliative nursing care effectively relieves clinical symptoms of lung cancer patients. Therefore, it is speculated that palliative nursing care based on the KAP theory may achieve similar results among advanced gastric cancer patients undergoing chemotherapy.

In view of this, this study focuses on the influence of KAP theory-based palliative nursing care on advanced gastric cancer patients undergoing chemotherapy.

MATERIALS AND METHODS

General Data

Eighty advanced gastric cancer patients hospitalised from June 2020 to June 2022 were enrolled and classified into two groups, with 40 cases in each group, using a random number table. The observation group consisted of 27 males and 13 females, aged 42-63 years (52.50±3.47 years). Gastric cancer occurred in the upper stomach (12 cases), middle stomach (14 cases), lower stomach (8 cases), and gastroesophageal junction (6 cases). In terms of pathological type, there were 31 cases of adenocarcinoma and and 9 cases of adenosquamous carcinoma. The control group consisted of 29 males and 11 females, aged 44-64 years (53.20±3.54 years). Gastric cancer occurred in the upper stomach (13 cases), middle stomach (11 cases), lower stomach (9 cases), and gastroesophageal junction (7 cases). In terms of pathological type, there were 32 cases of adenocarcinoma and 8 cases of adenosquamous carcinoma.

The inclusion criteria involved: (1) patients meeting the diagnostic criteria for gastric cancer [9] and definitely diagnosed by pathological biopsy; (2) those undergoing chemotherapy; (3) those who had normal cognitive function and could cooperate in the study; (4) those with an expected survival period of ≥6 months; (5) those with a Karnofsky score of ≥60 points [10]; and (6) those who and whose families signed the informed consent form. The exclusion criteria involved: (1) patients with aphasia or deafness; (2) those allergic to chemotherapy drugs; (3) those complicated

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with blood system diseases; (4) those with a history of anxiety, depression or other mental disorders; (5) those complicated with acute or chronic infection; and (6) those with other malignancies.

Chemotherapy regimens

S-1, (Taiho Pharmaceutical Co., Japan; strength: 25 mg) a combination of Tegafur, Gimeracil and Oteracil, approved for treatment of gastric cancer, was administered on days 1–14 and its dose was determined according to the body surface area: 40 mg/dose for body surface area of <1.25 m^2, 50 mg/dose for 1.25 m^2 ≤ body surface area <1.5 m^2, and 60 mg/dose for body surface area of ≥1.50 m^2. On day 1, oxaliplatin (Cenexi-Laboratories Thissen S.A., Belgium; strength: 50 mg) was intravenously infused at 130 mg/m^2. In addition, on day 1 of each week, Trastuzumab (Wurmisweg CH-4303, Switzerland; strength: 100 mg/vial) was intravenously infused at 8 mg/kg initially and 6 mg/kg subsequently. The treatment lasted 2 courses (21 days/course).

Nursing Mode for Control Group

The patients received routine nursing and dietary support was given with enteral nutrition suspension (Abbott Laboratories B.V., Netherlands; strength: 500 mL/vial), 4 vials/day (1 in the morning, 2 at noon and 1 in the evening). As for health education, knowledge of gastric cancer chemotherapy and chemotherapy-related adverse reactions was imparted to the patients, who were given psychological support and encouraged to exercise moderately.

Nursing Mode for Observation Group

Based on the KAP theory, the observation group received palliative nursing care:

(1) Cognitive intervention: a) The primary nurse explained the chemotherapy regimen to inform the patients of the effect and significance of chemotherapy drugs, and promoted the gastric cancer-related support through pictures and videos. Meanwhile, by watching documentaries, the patients were encouraged to come to terms with death, and realise that death is the destination we all share, thereby re-establishing cognition; b) The importance of chemotherapy was emphasised to the patients and they were informed of possible side effects during chemotherapy and the corresponding intervention measures.

(2) Belief development: a) The benefits of good belief in and attitude to chemotherapy for advanced gastric cancer were enumerated by giving examples to improve the patients' beliefs in the treatment. The patients who adopted active attitude towards the treatment were given support and encouragement in a timely manner while for those who adopted passive attitude towards the treatment, their beliefs were affirmed and their attitude changed with the help of psychological suggestion and family support; b) During chemotherapy, mutual aid meetings were regularly held to exert a peer effect, transmit positive signals, improve patients' confidence in chemotherapy, encourage more attention and emotional support to patients from their families, and help the patients establish beliefs in the treatment; c) Palliative nursing care was conducted as follows. Comfortable, bright and well-ventilated wards were provided to patients, giving a warm and quiet environment. The pain level was assessed by visual analogue scale (VAS). The Three-Step Analgesic Ladder proposed by WHO [11] was adopted to keep the pain level below 3 points and the pain outbreaks and drug rescue at less than 3 times per day. Soothing music favoured by the patients was played in the ward and muscle relaxation massage was given if necessary to make the patients more comfortable.

(3) Behaviour formation: a) Chemotherapy management was done as follows: The patients were encouraged to participate in their own nursing process and develop good behaviour habits, and guided to do respiratory exercise, perform abdominal massage, etc. They were also encouraged to develop good eating habits, i.e. more meals a day with less food at each, with a diet of mainly digestible, high-nutrition and high-vitamin food and yogurt; b) Continuous management was done as follows: After discharge, the patients were given diet and exercise guidance by the WeChat group, and relevant support for rehabilitation after chemotherapy was regularly provided to help the patients engaged in healthy behaviours. Intervention was made to the two groups until discharge.

Assessment of Nutritional Status

Before and after intervention, fasting peripheral venous blood (5 mL) from the elbow was collected from each patient in the early morning. Then the levels of prealbumin and haemoglobin were detected using a flow cytometer (CyFlow® Counter, Sysmex Partec GmbH, Germany), and the body mass index was obtained using a body weight and body fat meter (HBF-701, Krell Precision (Yangzhou) Co., China). The patient-generated subjective global assessment consisting of two parts was used to evaluate the nutrition condition [12]. The first part involving four dimensions (body mass change, dietary intake, symptoms and signs, activity and function) was filled in by the patients, and the second part involving three dimensions (age, metabolic stress state and physical examination) was filled in by the medical staff. The total score (0-35 points) was obtained by adding up the score of each dimension, and a higher score indicates a poorer nutritional status.

Evaluation of VAS Score

The pain level was evaluated by VAS (0-10 points) before and after intervention. A higher score indicates more severe pain.

Assessment of Psychological Status

Self-rating depression scale (SDS) and self-rating anxiety scale (SAS) were used to assess the depression and anxiety levels of patients before and after intervention [13, 14]. Both SDS and SAS have 20 items, with 1-4 points for each item. The total score was calculated (sum of score of each item × 1.25); a higher score indicates more serious depression and anxiety.

Evaluation of Living Quality

Before and after intervention, the living quality of patients was evaluated with the EORCT quality-of-life questionnaire-Core 30 [15], which covers five dimensions (physical function, social function, cognitive function, emotional function and role function) and general health. The total score is 100 points for each dimension – the higher the score, the better the living quality

Statistical Analysis

The SPSS25.0 software (IBM Inc., USA) was used for statistical analysis. Measurement data were presented as ($\bar{x} \pm s$). Comparison was made between two groups by the independent-samples *t*-test and within the same group by paired-samples *t*-test. Count data were presented as %, and the χ^2 test was performed. The number $p<0.05$ suggests a statistically significant difference.

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Ethical Statement

This study was approved by the Medical Ethics Committee of West China Tianfu Hospital, Sichuan University (Ethical Clearance No. 2022-1195).

RESULTS AND DISCUSSION

Nutritional Status

Higher levels of prealbumin, haemoglobin and body mass index were detected in both groups after intervention compared to those before intervention, being higher in the observation group than in the control group ($p<0.05$). However, the patient-generated subjective global assessment scores after intervention were lower in both groups compared to those before intervention, with the observation group having a lower score than the control group ($p<0.05$) (Table 1).

Table 1. Nutritional status before and after intervention ($\bar{x} \pm s$)

Time point	Group	Prealbumin (mg/L)	Haemoglobin (g/L)	Body mass index (kg/m^2)	PG-SGA score (point)
Before intervention	Observation	194.18±21.42	100.41±5.27	19.68±2.07	4.15±1.08
	Control	196.85±21.27	101.27±6.39	20.04±2.14	4.22±0.99
	t	0.559	0.657	0.765	0.302
	p	0.578	0.513	0.447	0.763
After intervention	Observation	237.69±19.86[a]	127.43±5.09[a]	22.13±1.68[a]	2.51±0.71[a]
	Control group	221.06±20.47[a]	119.66±5.11[a]	21.26±1.73[a]	3.37±0.86[a]
	t	3.688	6.813	2.282	4.877
	p	<0.001	<0.001	0.025	<0.001

[a] $p<0.05$ *vs*. the same group before intervention. (PG-SGA = patient-generated subjective global assessment)

KAP theory-based palliative nursing care can greatly improve the nutritional level of advanced gastric cancer patients undergoing chemotherapy. This phenomenon can be attributed to the fact that gastric cancer is highly destructive to the body, which can severely impair the patient's digestive function and affect the intake and absorption of various nutrients. At the same time, it is impossible to radically cure advanced gastric cancer patients, and these patients lack beliefs about treatment and have decreased compliance, thus affecting the effect of enteral nutrition support. Palliative nursing care based on the KAP theory helps patients re-establish positive cognition through cognitive intervention, helps them understand the gastric cancer and effect of chemotherapy through videos and pictures, and informs them of the importance of active nutrient intake for prolonging life, thereby enhancing their beliefs about treatment. Meanwhile, the nursing staff and family members verbally encourage the patients to make them feel loved and cared for, so that the patients can have a stronger survival belief and cooperate more actively with the nursing staff in nutrition intervention, thereby raising the nutritional level.

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VAS scores

After intervention, the VAS scores were lower in both groups compared to those before intervention, although the observation group also have a lower VAS score than the control group ($p<0.05$) (Table 2).

Table 2. VAS scores before and after intervention ($\bar{x} \pm s$, point)

Group	Before intervention	After intervention	*t*	p
Observation	5.47±1.14	2.27±0.39	16.797	<0.001
Control	5.62±1.22	3.07±0.44	12.435	<0.001
t	0.568	8.605		
p	0.572	<0.001		

Psychological Status

Post-intervention SDS and SAS scores were lower in both groups compared to those before intervention, with the observation group exhibiting lower scores than the control group ($p<0.05$) (Table 3).

Table 3. Psychological status ($\bar{x} \pm s$, point)

Time point	Group	SDS score	SAS score
Before intervention	Observation	57.84±8.84	58.79±9.48
	Control	58.93±9.16	59.31±10.03
	t	0.542	0.238
	p	0.589	0.812
After intervention	Observation	31.15±6.58[a]	33.70±6.17[a]
	Control	39.34±5.53[a]	41.02±6.94[a]
	t	6.026	4.985
	p	<0.001	<0.001

[a] $p<0.05$ *vs* the same group before intervention

KAP theory-based palliative nursing care can relieve the fear of chemotherapy and relieve the negative emotions of patients by assessing the pain of patients, developing pain intervention measures, actively controlling the pain of patients by analgesics according to the Three-Step Analgesic Ladder of WHO and enhancing the comfort level of patients during chemotherapy. At the same time, palliative nursing care based on the KAP theory also promotes the patients' enthusiasm for treatment and relieves their psychological pressure by creating a quiet and comfortable environment. Through playing soothing music, the patients' attention is shifted. Music can excite the auditory centre in the brain and restrain the pain centre, raise the pain threshold and reduce the pain level of patients. Moreover, music can increase the content of endomorphin in blood, exerting an analgesic effect [16]. With music, the patients can also relax, become less nervous and have no fear of disease and chemotherapy, so as to relieve anxiety and depression and improve the psychological status.

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Living Quality

The two groups had higher scores of physical function, social function, cognitive function, emotional function, role function and general health after intervention compared to those before intervention, although these scores were definitely higher in the observation group than the control group ($p<0.05$) (Table 4).

Table 4. Quality-of-life scores ($\bar{x} \pm s$, point)

Time point	Group	Physical function	Social function	Cognitive function	Emotional function	Role function	General health
Before intervention	Observation	45.74±3.12	49.47±3.52	46.27±3.42	49.16±3.56	45.12±3.58	43.64±3.43
	Control	45.53±3.15	49.37±3.47	45.34±3.52	49.27±3.57	45.38±3.13	43.73±3.48
	t	0.300	0.128	1.198	0.138	0.346	0.116
	p	0.765	0.898	0.234	0.891	0.730	0.908
After intervention	Observation	55.87±3.38[a]	62.18±3.02[a]	59.54±3.06[a]	58.28±3.25[a]	55.78±3.44[a]	56.28±3.14[a]
	Control	49.28±3.49[a]	58.27±4.10[a]	54.17±3.15[a]	53.38±3.52[a]	50.26±3.36[a]	52.58±3.32[a]
	t	8.579	4.856	7.734	6.469	7.260	5.121
	p	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001

[a] $p<0.05$ *vs* the same group before intervention

KAP theory-based palliative nursing care can effectively improve the living quality of advanced gastric cancer patients undergoing chemotherapy. Through the behaviour formation, the patients are encouraged to actively take part in their own nursing process and develop good nursing habits, thereby improving the nursing effect and the living quality. Meanwhile, the rehabilitation status of the patients can be timely tracked by the WeChat group, and relevant knowledge of chemotherapy rehabilitation can be regularly shared in the group. Out-of-hospital support can be provided for patients, improving the quality of out-of-hospital management and strengthening the rehabilitation of the patients, and thereby raising the quality of life.

CONCLUSIONS

In conclusion, palliative nursing care based on the KAP theory can effectively ameliorate the nutritional status, reduce the pain level, improve the negative emotions, and enhance the living quality of patients with advanced gastric cancer. Nevertheless, this study is limited; the sample size is small and the results are obtained from a single medical centre. In-depth multi centre studies with large sample sizes are in need in the future.

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