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Original Article

Effects of targeted nursing interventions on cancer pain and quality of life of advanced gastric cancer patients

Xueyan Zheng[1], Qi Jin[2], Qiaoqiao Lu[3], Qianqian Cai[3]

[1]Nursing Management Department, The First People's Hospital of Wenling, Wenling 317500, Zhejiang Province, China; [2]Department of Hepatobiliary Hernia Surgery, The First People's Hospital of Wenling, Wenling 317500, Zhejiang Province, China; [3]Department of Gastrointestinal Surgery, The First People's Hospital of Wenling, Wenling 317500, Zhejiang Province, China

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Abstract: Objective: To investigate the effects of targeted nursing interventions on numerical rating scale (NRS) scores and quality of life of advanced gastric cancer (AGC) in patients with cancer pain. Methods: A total of 74 AGC patients with cancer pain admitted to our hospital from September 2016 to March 2019 were randomly divided into study group (SG, n=37) (n=37) and control group (CG, n=37). Both groups received conventional nursing care, while SG additionally received targeted nursing interventions for cancer pain. The compliance behavior, pain control satisfaction and nursing satisfaction were compared between the two groups, and NRS scores, emotional state and quality of life scores were counted before and after intervention. Results: The total compliance rate, pain control satisfaction and nursing satisfaction scores in SG were higher than those in CG ($P < 0.05$). Compared with those before intervention, NRS, Self-Rating Anxiety Scale (SAS) and Self-Rating Depression Scale (SDS) scores were decreased in both groups ($P < 0.05$), while the quality of life scores were increased in both groups after intervention ($P < 0.05$). After intervention, NRS, SAS and SDS scores in SG were lower than those in CG ($P < 0.05$), while the quality of life scores in SG were higher than those in CG ($P < 0.05$). Conclusion: Targeted nursing interventions can relieve the cancer pain of AGC patients, achieving a high compliance for cancer pain treatment and a high satisfaction of cancer pain control. This is conducive to improvement of the quality of life of AGC patients.

Keywords: Advanced gastric cancer, cancer pain, targeted nursing interventions, numerical rating scale score, quality of life

Introduction

Gastric cancer is one of the most common malignancy and one of the global health concerns [1]. Advanced gastric cancer (AGC) patients with a tumor invasion experience the oppression and constriction that may focus on tissues and organs (e.g., periosteum, spinal cord, bone, brain) and nerve root, nerve trunk and plexus, causing local inflammatory reactions, local necrosis and cancer pain [2]. Relevant statistics show that patients with severe cancer pain account for approximately 50% of all gastric cancer patients [3]. Cancer pain not only leads to substantial physical pain, but also causes anxiety, depression and other negative emotions, reduces treatment compliance and affects quality of life of the patients [4]. According to the study of Cao et al. [5], an effective nursing intervention for patients with cancer pain can effectively alleviate cancer pain, improve the psychological state and quality of life of patients. However, routine nursing lacks pertinence and cannot meet the clinical needs. Targeted nursing is a relatively mature nursing model, which provides targeted nursing measures to patients. At present, targeted nursing has been widely used in the nursing of patients with gastric cancer, and the effect is remarkable. A study of Li et al. showed that targeted nursing intervention can significantly improve anxiety of patients with gastric cancer undergoing chemotherapy after surgery and improve nursing satisfaction [6]. However, there are few reports on the effect of targeted nursing intervention on cancer pain in patients with advanced gastric cancer. Bases on this, a total of 74 AGC patients

with cancer pain were grouped and received conventional nursing care and targeted nursing interventions. The nursing effects were compared. It is reported as follows.

Materials and methods

Clinical data: A total of AGC 74 patients with cancer pain admitted to our hospital from September 2016 to March 2019 were randomly divided into study group (SG, n=37) and control group (CG, n=37). This study was approved by the Ethics Committee of our hospital.

The case selection criteria: Inclusion criteria: (1) those who were in line with the relevant diagnostic criteria in *New Standard* of *Diagnosis* and *Treatment* of *Common Malignant Tumors: Archive of Gastric Cancer* [7], and accompanied by a *mild tenderness* and stabbing pain; (2) those who voluntarily signed informed consent; (3) those with the tumor stages of TNM stages III-IV; (4) those with numerical rating scale (NRS) score ≥ 4 points. Exclusion criteria: (1) those who suffered from mental illness or cognitive dysfunction; (2) those with the estimated survival < 3 months; (3) those with pain resulted from non-tumor factors; (4) those complicated by other malignant tumors or infectious diseases; (5) those with brain metastasis occurred in the tumor.

Nursing methods: CG received conventional nursing care, involving a brief introduction of diseases and treatment-related measures, answering questions raised by patients, dynamically monitoring vital signs, such as respiration, pulse and blood pressure of patients, keeping the attending physician informed of any abnormal conditions of patients, instructing patients to take proper diet and medications, and providing patients with applicable analgesic drugs when they experienced severe pains so as to conduct the intervention. SG received conventional nursing care and targeted nursing interventions for cancer pain: (1) Establishment of a nursing group. A nursing group was composed of a head nurse, a psychological counselor, an attending physician and three nurses. The educational training on gastric cancer and cancer pain was carried out regularly in the group, including psychological counseling for patients, causes of cancer pain and related treatment measures, application of analgesic drugs, and the team members were assessed regularly. Only those who passed the assessment could take up the posts, and those who failed the assessment would receive a targeted training until they passed the assessment. (2) Pain assessment. The responsible nurse assessed the conditions of patients according to the pain site and degree, and evaluated their psychological status and family situations. (3) Targeted psychological intervention. The medical staff actively communicated with patients, explained the knowledge related to cancer pain and the current treatment progress of cancer pain, instructed patients not to endure cancer pain, and timely informed medical staff if they felt pain. Through communication with patients, the medical staff understood their personalities, hobbies, and family conditions, encouraged them to express their worries and reduce their psychological pressure through catharsis, chat, etc., patiently guided them, helped them relieve their negative emotions, such as fear and depression, informed them of the influences of negative emotions on treatment of illness, and advised them to control emotions through listening to music, watching movies, reading newspapers and other ways that were effective in diverting their attention away from negative emotions. (4) Targeted drug interventions. The nurse selected proper analgesic drugs according to the pain characteristics and degree of patients, informed the patients of the medication method, dosage, potentially adverse reactions during medication, and treatment methods, and kept the attending physician informed in time in case of an abnormal situation. After 1 week, according to the medication effect and patients' feelings, the regimen and dosage were adjusted. Meanwhile, the issues identified in the medication process were understood, and targeted regimen was offered accordingly. (5) Targeted social *support*. The medical staff actively communicated with patients' families, informed them of the importance of family support in relieving the patient's cancer pain, and invited family members to participate in nursing work, so as to support, encourage, and care for the patients. The exchange meetings were regularly carried out among patients so that they could directly share their experiences with each other, and patients who had been successfully treated were invited to share their experiences, so as to improve the confidence of other patients in therapy and relieve their

psychological pressure. (6) Targeted extended nursing. Regular follow-ups were performed through visiting patients or via telephone calls, so as to understand the patient's treatment condition, identify the issues in the patient's treatment process and correct them, and adjust the regimen accordingly. A WeChat group and a public WeChat account were established for discharged patients to share relevant knowledge regularly.

Observation indices: The compliance behavior, pain control satisfaction and nursing satisfaction were compared between the two groups, and NRS scores, emotional state and quality of life scores were counted before and after intervention. (1) Compliance behavior. Full compliance: strictly following the physician's advice and taking medicine on time and in quantity. Partial compliance: occasionally omitting to take medicine and not taking medicine according to the dosage, and taking medicine on time and in quantity under the supervision of nurses. Non-compliance: unaware of the regimen, taking medicine when the illness worsened or taking medicine occasionally. The total compliance rate is the sum of partial compliance rate and full compliance rate. (2) Degree of pain. the degree of pain was assessed using NRS, with a total score of 10 points. The higher scores indicate a stronger degree of pain. (3) Pain control satisfaction. The nursing department in our hospital made a questionnaire to access the pain control satisfaction. The total score is 50 points, of which 46-50 points means very satisfied, 46-45 points means generally satisfied, < 35 points means dissatisfied, and the satisfaction rate is the sum of very satisfied rate and general satisfied rate. (4) Emotional state. Patients' emotional state was assessed using Self-Rating Anxiety Scale (SAS) and Self-Rating Depression Scale (SDS). The higher scores suggest the more serious anxiety and depression. (5) Quality of life. The patients' quality of life, including social function, material life status, physical function and psychological function, was assessed using the generic quality of life inventory-74 (GQOLI-74). The higher scores exhibit a better quality of life. (6) Nursing satisfaction. The nursing satisfaction, including nursing attitude, nursing quality and nursing environment, was assessed using the questionnaire designed by our hospital. The total score of each item was 50 points, and the higher scores reveal a higher degree of nursing satisfaction.

Statistical analysis

SPSS22.0 was adopted. The measurement data (NRS score, SAS score, SDS score, quality of life score, nursing satisfaction score, etc.) were expressed using ($\bar{x} \pm S$). The independent t test was used between groups, and the paired t test was adopted within groups. The enumeration data (compliance behavior, pain control satisfaction, etc.) were expressed using percentage and detected using χ^2 test. $P < 0.05$ suggested a statistically significant difference [8].

Results

Comparison of the clinical data between the two groups

There was no significant difference in terms of clinical data, including age, sex, TNM stage, course of disease and body weight between the two groups ($P > 0.05$), as shown in (**Table 1**).

Comparison of compliance behavior between the two groups

The total compliance rate (95.74%) in SG was significantly higher than that in CG (80.85%), and the difference was statistically significant ($P < 0.05$), exhibiting that targeted nursing interventions can effectively improve the compliance behavior of AGC patients with cancer pain (**Table 2**).

Comparison of degree of pain between the two groups

Compared with those before intervention, the NRS scores were decreased in both groups after intervention ($P < 0.05$), and the NRS scores in SG were lower than those in CG after intervention ($P < 0.05$), suggesting that targeted nursing interventions can effectively reduce the degree of pain of AGC patients with cancer pain (**Figure 1**).

Comparison of pain control satisfaction between the two groups

The pain control satisfaction (93.62%) in SG was significantly higher than that in CG

Table 1. Comparison of general data between the two groups

Group	Number of cases	Age (years)	Gender (M/F)	TNM Stage (Stage III/IV)	Course of disease (Month)	Body weight (kg)
Control group	47	49.23±6.79	26/21	24/23	10.36±2.17	60.98±6.24
Study group	47	49.51±7.06	27/20	22/25	10.23±2.09	61.25±6.39
t/χ^2 value	/	0.196	0.043	0.170	0.296	0.207
P value	/	0.845	0.835	0.680	0.768	0.836

Table 2. Comparison of compliance behavior between the two groups [n (%)]

Group	Number of cases	Full compliance	Partial compliance	Noncompliance	Total compliance
Control group	47	24 (51.06)	14 (29.79)	9 (19.15)	38 (80.85)
Study group	47	32 (68.09)	13 (27.66)	2 (4.26)	45 (95.74)
χ^2 value	-	-	-	-	5.671
P value	-	-	-	-	0.017

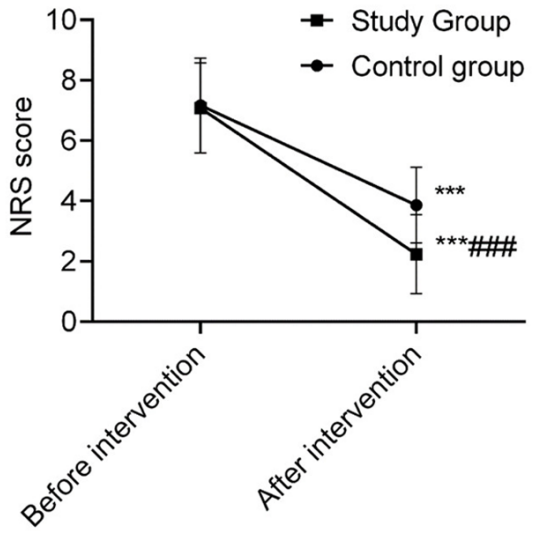

Figure 1. Comparison of NRS scores between the two groups before and after intervention. Note: Compared with before treatment, $^{***}P < 0.001$. Compared with control group, $^{###}P < 0.001$.

(78.72%), and the difference was statistically significant ($P < 0.05$), indicating that targeted nursing interventions can effectively improve pain control satisfaction of AGC patients with cancer pain (**Table 3**).

Comparison of emotional state between the two groups

Compared with those before intervention, SAS and SDS scores were decreased in both groups after intervention, and the difference was statistically significant ($P < 0.05$). After intervention, SAS and SDS scores in SG were lower than those in CG, and the difference was statistically significant ($P < 0.05$), exhibiting that targeted nursing interventions can effectively improve the emotional state of AGC patients with cancer pain (**Figure 2**).

Comparison of quality of life between the two groups

Compared with those before intervention, the quality of life scores of social functions, material life status, physical function and psychological function were increased in both groups after intervention, and the difference was statistically significant ($P < 0.05$). The quality of life scores in SG were higher than those in CG, and the difference was statistically significant ($P < 0.05$), suggesting that targeted nursing interventions can effectively improve the quality of life of AGC patients with cancer pain (**Figure 3**).

Comparison of nursing satisfaction between the two groups

The scores of nursing satisfaction in SG were higher than those in CG, and the difference was statistically significant ($P < 0.05$), exhibiting that targeted nursing interventions can effectively improve nursing satisfaction of patients AGC with cancer pain (**Figure 4**).

Discussion

With the aging Chinese population, the dramatic changes in Chinese eating habits, the number of gastric cancer patients is growing in

Table 3. Comparison of pain control satisfaction between the two groups [n (%)]

Group	Number of cases	Very satisfied	Generally satisfied	Not satisfied	Satisfaction
Control group	47	24 (51.06)	13 (27.66)	10 (21.28)	37 (78.72)
Study group	47	30 (63.83)	14 (29.79)	3 (6.38)	44 (93.62)
χ^2 value	-	-	-	-	4.374
P value	-	-	-	-	0.037

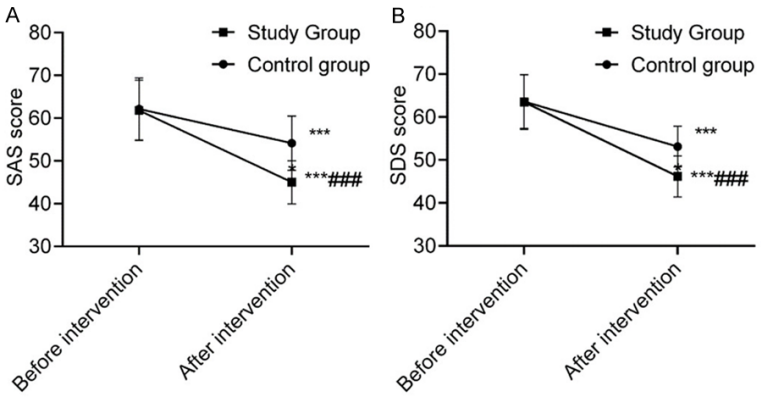

Figure 2. Comparison of SAS score and SDS score between the two groups before and after intervention. Note: Compared with before treatment, $^{***}P < 0.001$. Compared with control group, $^{###}P < 0.001$.

China. Cancer pain is a common complication of malignant tumors, and the number of cancer pain patients is on the rise [9]. Cancer pain afflicts AGC patients. If the progression of cancer pain is not effectively controlled, patients will experience fear, depression, insomnia, irritability and even suicidal tendency. This will not only seriously affect the therapeutic effects, but also reduce the quality of life of patients [10-13]. Currently, cancer pain has been emphasized by the World Health Organization as one of the most important symptoms for cancer prevention and treatment. Therefore, how to alleviate the cancer pain of AGC patients remains a tough issue to deal with for medical staff [14]. At present, opioids are mostly used to treat cancer pain of AGC patients in clinic. Although opioids have achieved certain analgesic effects, the long-term use of opioids and their toxic side effects lead to poor treatment compliance and poor analgesic effects [15]. According to the study of Bluethmann et al. [16], effective nursing interventions for patients with cancer pain is of great significance for alleviating their pain. However, there are some limitations in conventional nursing care, such as explanations of related knowledge, dietary guidance and the use of analgesic drugs. Therefore, a conventional nursing care cannot provide cares for patients with cancer pain, eliminate patients' negative emotions, enhance their confidence in therapy, arouse patients' enthusiasm for therapy, and improve the therapeutic effects [17, 18]. In addition, medical staffs responsible for a conventional nursing care often lack communication with patients and their families. This makes patients unable to express their psychological issues and needs, and thus makes it difficult to meet the nursing care needs of patients [19]. Therefore, it is still the key work to choose the appropriate nursing mode for AGC patients with cancer pain.

In this study, targeted nursing interventions combined with a conventional nursing care are performed for AGC patients with cancer pain. The results exhibited that the total compliance rate, pain control satisfaction and nursing satisfaction scores in SG were higher than those in CG. Compared with those before intervention, NRS, SAS and SDS scores were decreased in both groups, while all the quality of life scores were increased in both groups. After intervention, NRS, SAS and SDS scores in SG were lower than those in CG, while the quality of life scores in SG were higher than those in CG. Tang has found that targeted nursing intervention could significantly reduce SAS and SDS scores of patients with malignant tumors accompanied by cancer pain, and improve the quality of life scores [20]. A study of Zhang showed that targeted nursing intervention can significantly improve the NRS score of patients with advanced cancer pain taking opioids and improve nursing satisfaction. The above research results are basically consistent with this study. This exhibits that targeted nursing interventions for cancer pain can re-

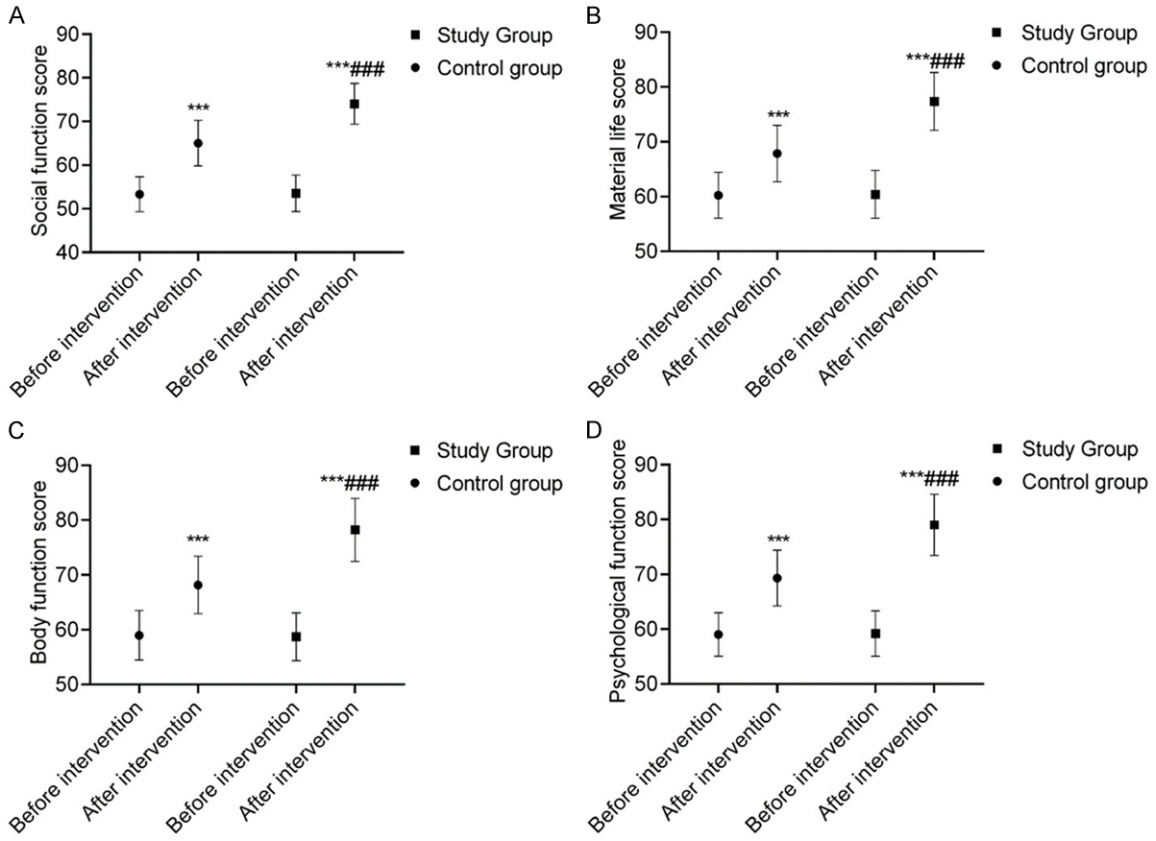

Figure 3. Comparison of quality of life scores between the two groups before and after intervention. Note: Compared with before treatment, $^{***}P < 0.001$. Compared with control group, $^{###}P < 0.001$.

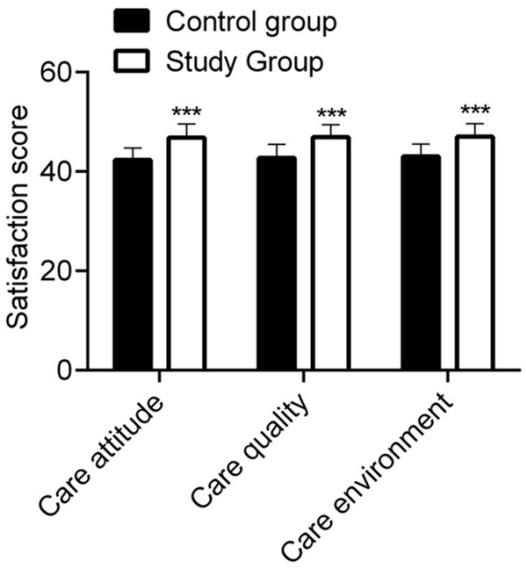

Figure 4. Comparison of nursing satisfaction between the two groups. Note: Compared with control group, $^{***}P < 0.001$.

duce the degree of pain of AGC patients with cancer pain. After intervention, patients had high compliance of cancer pain treatment and high satisfaction of cancer pain control. This is conducive to improvement of the quality of life of patients. The reasons are as follows: (1) a nursing group is established and regular training and assessment can effectively improve the relevant knowledge and professional quality of the members in the group. The degree of pain and pain site of patients are understood through assessment of their pain, providing a basis for the subsequent drug treatment and nursing measures. Through targeted psychological intervention, the medical staff could understand the psychological issues of patients, thus to patiently guide patients and eliminate negative emotions, such as fear and depression, make them devote themselves to therapy and improve the treatment compliance [21-23]. The targeted drug intervention can provide patients with proper analgesic drug treatment, and then improve the analgesic effects. Through targeted social support, patients can feel the nursing care and encouragement of family members, and the treatment experience exchange among patients can

further improve patients' confidence in therapy [24, 25]. Targeted extended nursing can help understand patients' treatment conditions anytime and anywhere, and adjust the regimen accordingly. This is of great significance to improve the therapeutic effects [26].

In summary, targeted nursing interventions for AGC patients with cancer pain can significantly relieve the pain and negative emotions, such as anxiety and depression, improve the cooperation and treatment compliance between nurses and patients, and promote the improvement of quality of life. Therefore, targeted nursing interventions feature remarkable advantages and are worthy of clinical application. However, in this study, the impacts of targeted nursing interventions on the progression of AGC patients are not analyzed, and it is suggested that impacts of targeted nursing interventions for cancer pain on the progression of AGC patients should be further explored in future clinical practices.

Disclosure of conflict of interest

None.

Address correspondence to: Qianqian Cai, Department of Gastrointestinal Surgery, The First People's Hospital of Wenling, No. 333, Chuanan South Road, Chengxi Street, Wenling 317500, Zhejiang Province, China. Tel: +86-15267288397; E-mail: ihd1jh@163.com

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