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Analysis of the application value and prognostic impact of comfort-oriented nursing in the operating room for gastric cancer patients with cancer-related insomnia

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Abstract: Background: Cancer-related insomnia (CRI) is a prevalent and clinically significant comorbidity among patients with cancer, particularly among patients diagnosed with gastric cancer (GC). This condition not only causes erratic fluctuations in physiological parameters but also induces a series of symptoms, including fatigue, neurasthenia, and exacerbation of negative emotional states, thus disrupting the normal trajectory of treatment and hindering the recovery of patients. **Objective:** To evaluate the impact of comfort-oriented nursing in the operating room on the recovery outcomes of GC patients with concomitant CRI, thereby providing evidence-based insights for clinical decision-making. **Methods:** A total of 137 GC patients with CRI who were admitted to our institution between October 2022 and October 2023 were selected for this study. Of these patients, 72 patients who received routine nursing in the operating room composed the control group. The remaining 65 patients received comfort-oriented nursing in the operating room and composed the observation group. The postoperative gastrointestinal function recovery time was recorded in both groups. Additionally, the Pittsburgh Sleep Quality Index (PSQI) and the Self-rating Anxiety/Depression Scale (SAS/SDS) were utilized to assess sleep quality and the presence of negative emotional states, respectively. Moreover, patient postoperative pain and satisfaction with nursing care were surveyed. All the patients were followed up for 1 year, during which survival rates and quality of life metrics were documented. **Results:** Compared with the control group, the observation group demonstrated significantly shorter postoperative gastrointestinal function recovery times ($P < 0.05$). Additionally, patients in the observation group had lower PSQI, SAS, and SDS scores after the intervention ($P < 0.05$). Moreover, patients in the observation group reported milder postoperative pain and higher satisfaction with nursing care ($P < 0.05$). Finally, although no significant intergroup differences were observed in overall survival rates during the 1-year follow-up period ($P > 0.05$), patients in the observation group reported better quality of life. **Conclusion:** comfort-oriented nursing in the operating room can effectively ameliorate sleep disturbances and mitigate negative emotions in GC patients with CRI, thereby facilitating the postoperative recovery of these patients.

Keywords: gastric cancer; cancer-related insomnia; comfort-oriented nursing; anxiety; depression

1. Introduction

Gastric cancer (GC), which originates from epithelial cells of the gastric mucosa, is among the most important malignancies worldwide. The incidence of GC exhibits marked geographical disparities, and the prevalence of GC is particularly

high in East Asia [1]. Epidemiological data from 2020 revealed that over 1 million new cases of GC were diagnosed worldwide, with an increasing trend in incidence rates over time [2]. Moreover, GC is the fourth leading cause of cancer-related death worldwide, accounting for more than 770,000 deaths annually [3]. Surgical resection remains the cornerstone of curative GC treatment. However, patients often experience significant psychological distress, which is attributable to factors such as insufficient disease awareness, fear of surgical procedures, and anxiety about prognosis [4]. Moreover, the physical stressors that are associated with surgery, including incisional pain, traumatic tissue injury, and the invasive nature of such procedures, contribute to the high prevalence of cancer-related insomnia (CRI) among GC patients [5]. A comprehensive review by Fleming et al. reported that the incidence of CRI among cancer patients was between 25% and 50%, highlight the significance of CRI as a prominent patient-reported symptom [6]. Additionally, CRI not only disrupts physiological homeostasis but also exacerbates psychological morbidity, ultimately hindering treatment efficacy and patient recovery [7].

The optimization of sleep quality in patients with CRI has emerged as a critical focus in clinical practice. Recently, emphasis on the development of personalized nursing interventions that are tailored to the unique needs of this patient population has increased. For example, Yang et al. reported that stepped-care models can effectively improve sleep quality among cancer patients [8]. Among these models, comfort-oriented nursing in the operating room is an excellent representative nursing plan. For laparoscopic surgeries, such a care model has been shown to increase surgical efficiency, accelerate postoperative recovery, and attenuate stress responses [9]. Comfort theory is a new philosophy of nursing that was proposed by Katherine Kolcaba, and it emphasizes that comfort is not only an outcome but also an active process that involves a nurse's self-involvement in the nursing process and the overall satisfaction of patient needs [10]. The comfort-oriented nursing method derived from Kolcaba's comfort theory has achieved excellent results when applied in the clinic. For example, Okuyan et al. confirmed that comfort-oriented nursing can improve the labor and delivery experience of women in labor [11], and Oliveira et al. reported that comfort-oriented nursing can improve the comfort of hospitalized elderly patients [12]. Additionally, a recent study by Yılmaz et al. further highlighted the pivotal role of comfort-oriented nursing in the operating room in improving postoperative comfort and sleep quality [13]. Considering these findings, it is hypothesized that GC patients with CRI may experience similar benefits. However, no studies have directly shown the effect of comfort-oriented nursing in the operating room on patients with GC, so guidance for the treatment of patients with GC remains lacking.

Therefore, the present study aimed to systematically evaluate the application value of comfort-oriented nursing in the operating room for GC patients with CRI in order to increase the safety and efficacy of clinical care for this vulnerable patient population and to provide a more reliable guarantee for the safety of future clinical GC treatment.

2. Materials and methods

2.1. Research subjects

We conducted a prospective analysis. First, we calculated the sample size needed for the study (with Gpower 3.1.9 software). The parameter settings that were used were as follows: effect size = 0.3 (medium-sized study), $\alpha = 0.05$, and power = 0.8. The calculations revealed that a minimum of 64 study subjects were needed in each group. A total of 137 patients with GC complicated by CRI who were admitted to our hospital from October 2022 to October 2023 were selected as the research subjects. Among these patients, 72 patients received routine nursing in the operating room and composed the control group, and the other 65 patients received comfort-oriented nursing in the operating room and composed the observation group. All the patients were blinded to their group. In the control group, there were 40 males and 32 females, aged 41–73 years, with a mean age of 53.49 ± 6.33 years. In the observation group, there were 39 males and 26 females aged 45–72 years, with a mean age of 55.08 ± 3.88 years. No statistically significant intergroup differences were found in the clinical data ($P > 0.05$). Additionally, this study was approved by the Ethics Committee of our hospital (No. 20240523) and strictly followed the principles of the Declaration of Helsinki. All the study subjects signed an informed consent form.

The inclusion criteria were as follows: (1) diagnosis of GC by gastroscopy and treatment with laparoscopic surgery at our hospital; (2) presence of CRI [14]; (3) complete and accessible clinical records, with no evidence of cognitive dysfunction; (4) no previous history of insomnia; and (5) pathological staging: early–middle stage.

The exclusion criteria were as follows: (1) conversion to open abdominal surgery; (2) presence of mental disorders; (3) presence of diseases affecting other organs, such as the liver, heart, or kidneys; (4) expected survival < 3 months; (5) pregnancy or lactation; and (6) failure to complete the follow-up.

2.2. Methods

Control group: Preoperatively, medical staff carried out routine examinations and made surgical preparations, meticulously inventorying surgical instruments. During the operation, the medical staff coordinated with the primary surgeon and anesthesiologist to ensure smooth progression of the surgery. Postoperatively, patient vital signs, including heart rate, blood pressure, respiratory rate, and body temperature, were monitored with the utmost diligence. If any abnormal conditions arose, the nursing staff reported them to the physician to implement effective measures.

Observation group: (1) Management of the operating room environment: Preoperatively, medical staff examined the temperature and humidity of the operating room, regulating these conditions within a reasonable range (temperature: 22–24 °C and humidity: 40%–60%). The ventilation system was also carefully inspected to ensure that it met all the requirements for maintaining a clean and sterile surgical environment. Additionally, considering the specific conditions of each

patient, relevant warming measures were proactively taken (intravenous fluids and blood products were preheated to 36–37 °C, the saline used for intraoperative irrigation solution and gauze soaking was preheated to 37 °C, and the temperature change blanket was preheated at 38–40 °C). (2) Preoperative preparation: According to the individual circumstances of each patient, the medical staff provided comprehensive information about the disease, elaborated on the specific surgical procedures, emphasized the importance of patient cooperation during the perioperative period, and informed the patient about potential surgical complications. In response to patient inquiries and concerns, the medical team maintained unwavering patience and compassion. The medical staff used plain and accessible language to address all the patient questions, ensuring that patients completely understood the information provided. Moreover, efforts were made to soothe the patients' emotions and help patients maintain a relaxed mindset. For patients with severe negative emotions, the medical staff actively established an environment that was conducive to self-expression. The medical staff encouraged patients to articulate their true feelings, providing a safe space for emotional catharsis. Through communication, the medical team understood and identified changes in patient psychological states, analyzed the causes of negative emotions, and provided targeted psychological counseling when necessary to help patients adjust their mental states. The standardized intervention was 20–30 min per session, with 1–2 sessions per day, starting 1–3 days before surgery. For patients with severe negative emotions, this number was increased to 2–3 sessions per day, each lasting until the patient stabilized. (3) Intraoperative nursing interventions: Upon successful positioning of the patient, a cervical orthosis was carefully applied around the patient's neck to prevent the head from slipping. The pressure was controlled at 20–30 mmHg, a silicone foam dressing with a thickness of ≥ 5 mm was applied to the sacrococcygeal area, covering an area 2 cm outside the peripheral diameter of the bony protrusion, and the skin pressure was measured every 30 min. Concurrently, pressure-relieving dressings were affixed to the sacral and scapular regions to increase the surface area of bony prominences, thereby mitigating the risk of local blood supply insufficiency. The patient's lower torso was subsequently covered with a thermoregulatory blanket, whereas the upper body was covered with a single-layer cotton quilt. The core body temperature (nasopharyngeal or esophageal probe) was maintained at 36.0–37.0 °C, and the body temperature was recorded every 5 min during the operation. If the temperature was lower than 36.0 °C, stepwise warming was immediately initiated: (1) the temperature of the warming blanket was increased to 40 °C; (2) the head was covered with a warming cap (to reduce heat loss by 30%); and (3) the 37 °C warming fluid (no more than 15 ml/kg/h) was infused. During the skin disinfection procedure, the surgical team endeavored to minimize exposure time, thereby reducing the potential for heat loss. The exposure time for skin disinfection was controlled at ≤ 2 min, and the nondisinfected area was promptly covered with a thermal sheet. The operating room nurse quietly passed the surgical instruments that were needed, reduced the sounds of the instruments as much as possible, and refrained from discussing topics unrelated to the surgery. All the intravenous medications and blood products were prewarmed before being infused

into the patient's body, and all the surgical gauzes were soaked in prewarmed sodium chloride solution, ensuring optimal thermal comfort for the patient. During the operation, patient vital signs were continuously monitored, and body temperature was measured at 5-min intervals. Any deviation from normal values was immediately relayed to the attending surgeon for prompt intervention. (4) Pre- and postoperative transfer and handover: Thirty minutes before the end of the surgery, the patient's return bed was preheated with a warming blanket (38–40 °C). During the transfer process, additional warmth was provided using a cotton quilt to maintain the patient's thermoregulatory stability. During transfer, the patient's body surface temperature was maintained at ≥ 36.5 °C (axillary temperature), and the room temperature in the recovery room was maintained at 24–26 °C with 50% humidity. Once the patients regained consciousness following anesthesia, they were safely transferred back to the ward. The operating room team then gave all the relevant surgical details to the nursing staff in the ward.

2.3. Prognosis follow-up

Upon patient discharge, a one-year prognostic follow-up was initiated. The follow-up modality included in-hospital reviews, with a scheduled frequency of once per month, and information about patient prognosis was collected by a member of the study team in a face-to-face conversation.

2.4. Outcome measurement

Gastrointestinal function recovery: The time to bowel sound recovery after surgery, as well as the time of the first postoperative flatus and defecation, were recorded.

Sleep status: The Pittsburgh Sleep Quality Index (PSQI) [15] was administered before and after the nursing interventions. This instrument includes seven domains, namely, sleep quality, sleep latency, sleep duration, sleep efficiency, sleep disturbances, use of sleep medications, and daytime dysfunction; higher scores indicate a more significant impairment in the respective aspect of sleep quality.

Psychological state: The Self-rating Anxiety Scale (SAS)/Depression Scale (SDS) [16] was used to assess patient psychological states before and after nursing care. Each scale includes 20 items and uses a Likert-type 4-point rating system. A higher cumulative score on the SAS and SDS indicates a greater degree of anxiety or depression, respectively.

Postoperative pain: The Visual Analogue Scale (VAS) [17] was used to evaluate the intensity of postoperative pain on the 1st, 3rd, 5th, and 7th days after surgery. Higher scores correspond to more severe pain perception.

Nursing satisfaction: At the time of patient discharge, an anonymous nursing satisfaction survey was conducted. The survey used a 3-point scale, with 1 point indicating "very satisfied", 2 points indicating "basically satisfied", and 3 points indicating "dissatisfied".

Prognosis: The survival of patients during follow-up was recorded. At the final follow-up visit, the European Organization for Research and Treatment of Cancer Quality of Life Questionnaire-Core 30 (EORTC QLQ-C30) [18] was administered.

This scale assesses multiple aspects of patient quality of life, including the global health status (GHS), five functional domains [physical functioning (PF), role functioning (RE), emotional functioning (EF), cognitive functioning (CF), and social functioning (SF)], and three symptom domains [fatigue (FA), nausea and vomiting (NV), and pain (PA)]. Higher scores across these domains indicate a more favorable quality of life.

2.5. Statistical analysis

Statistical analysis was performed using SPSS v25.0 software. For the comparison of measurement data (presented as $\bar{x} \pm s$), independent-sample *t* tests and paired *t* tests were used. For the comparison of count data [presented as *n*(%)], the chi-square test was applied. The Kaplan-Meier method was used to estimate survival rates, and the log-rank test was subsequently applied to compare the survival curves between different groups. Statistical significance was set to a threshold of $P < 0.05$.

3. Results

3.1. Comparison of gastrointestinal function recovery

Compared with the control group, the observation group demonstrated a statistically significant reduction in the time to bowel sound recovery, as well as the time to the first postoperative flatus and defecation ($P < 0.05$). These results indicate that comfort-oriented nursing in the operating room can shorten the postoperative recovery of patients (Table 1).

Table 1. Gastrointestinal function recovery.

Groups	<i>n</i>	Time to bowel sound recovery after surgery (h)	Time of first postoperative flatus (h)	Time of first postoperative defecation (h)
Control group	72	41.83 ± 11.54	65.74 ± 11.45	45.63 ± 6.71
Observation group	65	34.62 ± 10.56	58.40 ± 10.88	41.75 ± 7.48
<i>t</i>		3.805	3.834	3.194
<i>P</i>		<0.001	<0.001	0.002

3.2. Comparison of sleep conditions

The PSQI scale was utilized to assess patient sleep status. Before the implementation of the nursing interventions, no statistically significant differences in PSQI scores were detected between the two groups ($P > 0.05$). After nursing, in the control group, only the scores for sleep duration, sleep disturbances, and use of sleep medications decreased ($P < 0.05$), whereas the other scores did not change ($P > 0.05$). In the observation group, the survey results in all the dimensions significantly decreased and were even lower than those in the control group ($P < 0.05$). In other words, comfort-oriented nursing in the operating room improves patient postoperative sleep (Tables 2 and 3).

Table 2. Sleep conditions before the nursing intervention.

Before nursing	Control group (n = 72)	Observation group (n = 65)	t	P
Sleep quality	2.43 ± 0.60	2.37 ± 0.60	0.596	0.552
Sleep latency	2.40 ± 0.55	2.48 ± 0.62	0.746	0.457
Sleep duration	2.50 ± 0.61	2.37 ± 0.52	1.352	0.179
Sleep efficiency	2.68 ± 0.53	2.62 ± 0.60	0.675	0.501
Sleep disturbances	2.00 ± 0.65	1.94 ± 0.53	0.605	0.546
Use of sleep medications	2.36 ± 0.54	2.34 ± 0.59	0.234	0.815
Daytime dysfunction	2.53 ± 0.56	2.68 ± 0.56	1.560	0.121

Table 3. Sleep conditions after the nursing intervention.

After nursing	Control group (n = 72)	Observation group (n = 65)	t	P
Sleep quality	2.42 ± 0.58	1.71 ± 0.49***	7.715	<0.001
Sleep latency	2.38 ± 0.68	1.78 ± 0.41***	6.054	<0.001
Sleep duration	1.65 ± 0.48***	1.14 ± 0.35***	7.119	<0.001
Sleep efficiency	2.65 ± 0.61	1.83 ± 0.49***	8.670	<0.001
Sleep disturbances	1.18 ± 0.39***	1.05 ± 0.28***	2.317	0.022
Use of sleep medications	1.25 ± 0.50***	1.03 ± 0.25***	3.215	0.002
Daytime dysfunction	2.56 ± 0.67	1.94 ± 0.56***	5.838	<0.001

Note: ** denotes $P < 0.001$ compared with pre-nursing intervention scores of the same group.

3.3. Comparison of psychological state and postoperative pain

For psychological state, no significant differences in the SAS and SDS scores prior to the nursing interventions were observed between the two groups ($P > 0.05$). After nursing, the SAS and SDS scores decreased in both groups; however, the

Table 4. Psychological state and postoperative pain.

		Control group (n = 72)	Observation group (n = 65)	t	P
SAS	Before	55.44 ± 5.35	56.57 ± 6.02	1.158	0.249
	After	42.90 ± 7.61	38.14 ± 7.94	3.585	<0.001
	t	11.441	14.923		
	P	<0.001	<0.001		
SDS	Before	54.92 ± 5.47	55.14 ± 6.53	0.216	0.829
	After	42.44 ± 6.83	35.85 ± 5.91	6.019	<0.001
	t	12.090	17.672		
	P	<0.001	<0.001		
VAS	1 d after surgery	7.08 ± 1.54	6.82 ± 1.32	1.089	0.278
	3 d after surgery	4.78 ± 1.15	3.94 ± 0.83	4.848	<0.001
	5 d after surgery	3.00 ± 0.80	2.12 ± 0.76	6.536	<0.001
	7 d after surgery	1.33 ± 0.65	1.20 ± 0.59	1.251	0.213
	F	367.342	474.031		
	P	<0.001	<0.001		

scores in the observation group were significantly lower than those in the control group ($P < 0.05$). For postoperative pain, lower VAS scores were observed on postoperative days 3 and 7 in the observation group than in the control group ($P < 0.05$). These findings indicate that comfort-oriented nursing in the operating room also improves patient postoperative psychological status and pain (Table 4).

3.4. Comparison of nursing satisfaction

The results of the nursing satisfaction survey indicated that the overall satisfaction rate of the observation group was 90.77%, which was significantly higher than that of the control group ($P < 0.05$). These findings demonstrate that comfort-oriented nursing in the operating room improves patient satisfaction with care (Table 5).

Table 5. Nursing satisfaction.

Groups	<i>n</i>	Very satisfied	Basically satisfied	Dissatisfied	Overall satisfaction rate (Very satisfied + Basically satisfied)
Control group	72	25 (34.72)	31 (43.06)	16 (22.22)	77.78
Observation group	65	30 (46.15)	29 (44.62)	6 (9.23)	90.77
χ^2					4.277
<i>P</i>					0.039

3.5. Comparison of prognosis

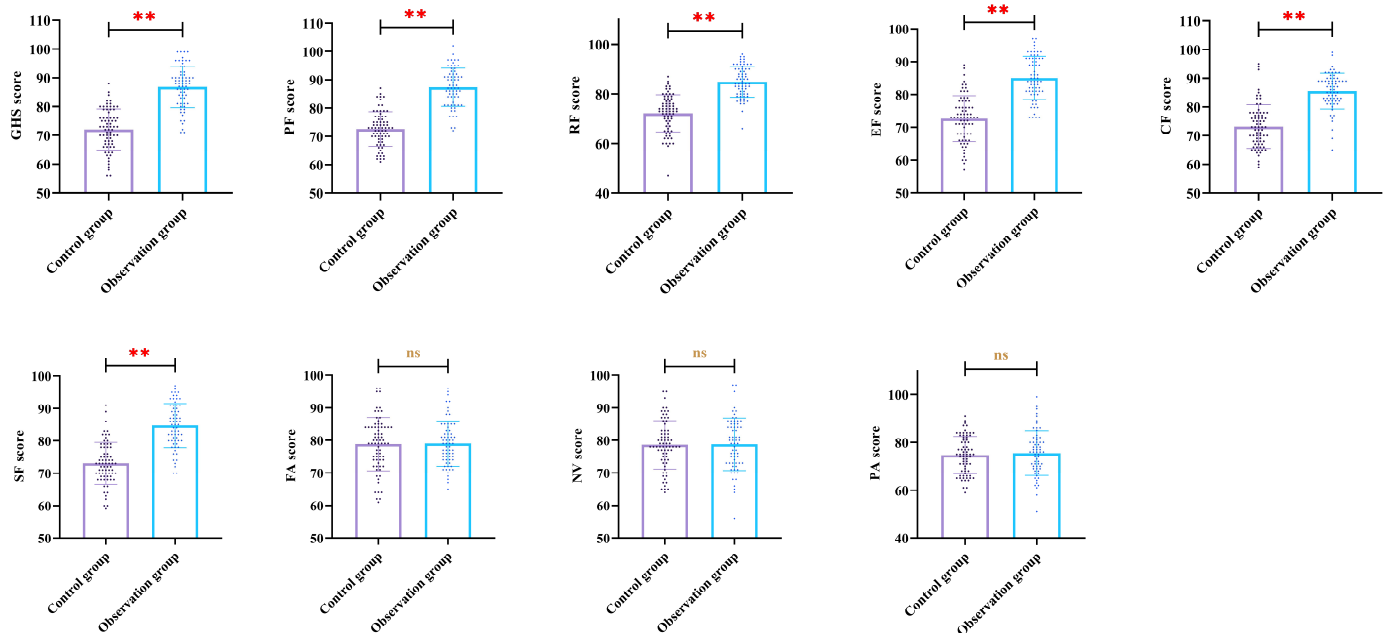


Figure 1. Prognostic EORTC QLQ-C30 score results for both groups. The scores of GHS, 5 functional domains (PF, RF, EF, CF, and SF) and 3 symptom domains (FA, NA, and PA) were included. ** $P < 0.01$, ns $P > 0.05$.

During the prognostic follow-up, all the study subjects were successfully tracked. There was no statistically significant difference in the one-year overall survival rate between the two groups ($P > 0.05$). However, according to the EORTC QLQ-C30 scores, no significant differences were found in the scores of the symptom

domains between the two groups ($P < 0.05$). Nevertheless, the scores of GHS, PF, RF, EF, CF, and SF were all greater in the observation group than in the control group ($P < 0.05$). In other words, comfort-oriented nursing in the operating room helps improve patient prognostic quality of life (**Figure 1**).

4. Discussion

Despite significant achievements in the treatment of GC due to advances in medical standards, the prognosis of some patients remains unfavorable. The factors that influence patient outcomes are multifaceted. While the pathological characteristics of the disease undeniably play a crucial role, factors such as CRI and negative emotions also profoundly affect patient outcomes [19]. In modern clinical healthcare, there is an increasing emphasis on the holistic approach to cancer patient management. This approach not only involves meticulous monitoring and management of physiological parameters but also requires vigilant attention to the psychological well-being of patients [20]. Although conventional nursing protocols have broad applicability, they are insufficient for meeting the unique psychological needs of GC patients with CRI. Therefore, in the present study, we implemented comfort-oriented nursing in the operating room with the aim of promoting the overall recovery of GC patients with CRI.

In this study, the implementation of comfort-oriented nursing in the operating room led to accelerated rehabilitation of patients in the observation group compared with those in the control group, suggesting that comfort-oriented nursing in the operating room plays a role in promoting the rehabilitation of GC patients with CRI. Although laparoscopic radical gastrectomy is a minimally invasive surgery that is associated with less surgical trauma and easier postoperative recovery, surgical patients invariably experience psychological stressors. These negative emotions can reduce the gastrointestinal function of patients and even cause gastrointestinal dysfunction, which is not conducive to postoperative recovery [21]. Routine nursing, while capable of providing sufficient nursing services according to patient conditions, often falls short in addressing the nuanced psychological needs of patients. However, comfort-oriented nursing in the operating room adheres to the concept of people-oriented nursing. This approach can fully exploit the subjective initiative of nursing staff to improve overall nursing quality and enable patients to achieve an optimal surgical state by reducing the impact of stress responses on the surgical process, thus facilitating faster and better recovery. Li et al. reported that comfort-oriented nursing in the operating room can improve the postoperative rehabilitation of patients undergoing laparoscopic gynecological surgery [22], and their findings also support our view.

In the subsequent comparison of sleep conditions, it was evident that the PSQI scores of the observation group exhibited a more substantial reduction than those of the control group after the nursing intervention, indicating that comfort-oriented nursing in the operating room also has marked advantages in improving patient sleep quality. Clinically, sleep quality is considered an important indicator for evaluating postoperative patient quality of life. Through this indicator, valuable insights can be gleaned about patient postoperative recovery [23]. Surgery, which is a strong

stressor, has a pronounced effect on patient sleep patterns. Notably, for patients with CRI, the incidence and severity of sleep disturbances are often exacerbated postoperatively. Through the application of comfort-oriented nursing in the operating room, we can transform the concept of nursing into a patient-centered management principle and incorporate diverse types of nursing support. This will not only ease negative emotions of patients but also stimulate their subjective initiative, thus greatly alleviating sleep disorders in patients. In the study on the use of comfort-oriented nursing in the operating room by Gao et al., a similar view to ours was also put forward [24].

Similarly, the patients in the observation group had more significant decreases in their SAS, SDS, and VAS scores after nursing than those in the control group, and this finding further confirmed the positive effect of comfort-oriented nursing in the operating room on alleviating the negative emotions of GC patients with CRI. The use of comfortable nursing in the operating room for GC surgical patients and the adoption of corresponding nursing services according to different physical and mental states of patients during the perioperative period help maintain optimal physiological and psychological states for patients. For example, strengthening ward rounds before surgery and providing patients with guidance about effective ways to fall asleep quickly can maintain good patient conditions and thus facilitate smooth progression of surgery. In addition, providing effective psychological counseling for patients can eliminate their fear and increase their confidence in the surgical intervention. Furthermore, strengthening temperature care during the operation and remaining by a patient's side can make the patient feel safer. Moreover, when environmental, pain management, and dietary care practices are improved, patient comfort is significantly increased, and sleep quality remains uncompromised; thus, these practices can effectively optimize the physical and mental states of patients and accelerate the recovery process. In the study by Kılınç et al., comfort-oriented nursing in the operating room was described as revolutionizing traditional passive nursing measures by transforming them into proactive measures, shifting the focus from nursing itself to the needs of patients. As a result, patients are surrounded by a warm, homely atmosphere, and they receive care similar to the care that family members would provide. This empathetic approach allows patients to perceive the genuine concern of medical staff, providing profound psychological solace and effectively mitigating negative emotional states [25].

Finally, throughout the prognostic follow-up period, we found that the EORTC QLQ-C30 scores of the patients in the observation group also improved more significantly than those of the patients in the control group; this finding suggests that the quality of life prognosis in our observation group was better and that the foundation for this outcome was laid by the use of comfort-oriented nursing in the operating room. Presumably, comfort-oriented nursing in the operating room established a stronger foundation for favorable patient outcomes. However, no clear difference in the overall survival rate between the two groups was observed. This result is likely attributable to the fact that all the enrolled patients were in the early to middle stages of disease, resulting in comparable survival. Of course, we need to increase the number of patients and extend the period of follow-up to confirm these

results. In addition, the paucity of objective clinical metrics in this study prevents us from objectively evaluating the comprehensive impact of comfort-oriented nursing in the operating room. Hence, addressing these limitations should be prioritized in subsequent research. Furthermore, this study was a single-center study with little variation in the study population, and all the patients were of Chinese descent; thus, we cannot currently ensure that comfort-oriented nursing in the operating room will have the same effect in all countries worldwide. Moreover, comfort-oriented nursing in the operating room may also be affected by the basic conditions of a hospital. In this context, we need to conduct a case study with large amounts of data from multiple hospitals to further elucidate the impact of comfort care in the operating room on GC patients. Of course, we cannot exclude the influence of the Hawthorne effect; thus, we will conduct a retrospective analysis to validate the results of the current study after more cases accumulate.

5. Conclusion

Comfort-oriented nursing in the operating room is recommended for use in the clinic, as it can effectively mitigate sleep disorders and negative emotions in patients with GC complicated by CRI and promote their postoperative rehabilitation, thus laying a more reliable foundation for favorable prognoses. These findings provide a safer medical approach for the treatment of GC patients in the future and have high clinical application value.

Author contributions: Conceptualization, JS and XS; methodology, JS; validation, JS, XS and YT; formal analysis, JS, XS and YT; investigation, JS; data curation, JS and XS; writing—original draft preparation, JS; writing—review and editing, JS, XS and YT. All authors have read and agreed to the published version of the manuscript.

Institutional review board statement: The study was conducted in accordance with the Declaration of Helsinki, and approved by the Ethics Committee of Nanjing Jiangning Hospital (protocol code 2025-03-037-K01, approval date: 17 June 2025).

Informed consent statement: Informed consent was obtained from all subjects involved in the study.

Conflict of interest: The authors declare no conflict of interest.

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