



Research Article

Effects of Multidisciplinary Specialized Nursing Care on the Short and Long-term Postoperative Quality of Life in Patients with Pancreatic Cancer: A Randomized Controlled Trial

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Abstract

Objective: To analyze the effects of multidisciplinary specialized nursing care on the short and long-term postoperative quality of life in patients with pancreatic cancer.

Methods: This is a randomized controlled trial. In this study, 88 patients with pancreatic cancer who were treated at our hospital between January 2021 and January 2022 were recruited and allocated 1:1 either to receive into routine nursing care ($n=44$, routine group) or interdisciplinary specialist nursing care ($n=44$, study group). The outcome measures in both groups included surgery-related indices, short and long-term quality of life, and adverse responses.

Results: There were no participants who dropped out of this study due to treatment intolerance, nor were there any additional participants. Patients in the study group had significantly shorter recovery time from gastrointestinal function, bed rest and hospital stay than those in the conventional group ($P<0.05$). Before the intervention, there was no significant difference in the quality of life between the two groups ($P>0.05$); 3 months and 1 year after the intervention, the quality of life of patients in the study group was higher than that of patients in the conventional group ($P<0.05$). The overall incidence of adverse reactions was significantly lower in the study group than in the conventional group ($P<0.05$).

Conclusion: Multidisciplinary specialized nursing care produces an ideal clinical outcome for postoperative patients with pancreatic cancer. It substantially reduces recovery time, boosts short and long-term postoperative quality of life, and diminishes the incidence of adverse reactions in patients. This protocol merits clinical application.

Keywords: multidisciplinary, specialized nursing care, pancreatic cancer, postoperative, short- and long-term quality of life

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1 INTRODUCTION

Pancreatic cancer is the most malignant tumor arising from the digestive system and its overall median survival time is only 5-8 months, with 5-year survival rate of less than 3%^[1]. In recent years, the incidence of pancreatic cancer has been on a rise globally, with higher occurrence in China^[2]. Currently, patients with pancreatic cancer is dominantly managed by surgery. Yielding certain promising results notwithstanding, the prognosis of patients is dismal due to the difficulty of surgery and the high incidence of postoperative adverse responses^[3]. The above risk factors place further demands on perioperative patient care. Avoiding these factors requires effective clinical care, which can have a positive impact on preventing adverse postoperative symptoms and further improving prognosis^[4].

Relevant studies have shown that effective nursing care plays a positive role in the recovery after cancer surgery. Concurrently, the mental stress caused by the disease is detrimental to recovery. Therefore, postoperative care and interventions are crucial for patients with pancreatic cancer. Multidisciplinary treatment (MDT) is a new treatment model developed in recent years in the clinical practice of large medical centers, guided by the concept of evidence-based medicine and based on the results of multicenter randomized clinical studies, to establish a modern collaborative treatment model for different diseases and improve the specialization and standardization of clinical treatment.

Nursing staff are important members of the MDT team, and the introduction of MDT into nursing is a model known as “multidisciplinary specialty care” that can improve the triage, systemic and comprehensive nature of nursing care, and is an important part of improving the overall level of care and quality of service. Evidence has shown that the causes of cancer are complex and that there is a close relationship between physiological and pathological factors and psychological and social factors. Therefore, the role of cognitive-behavioral interventions in patient recovery should not be underestimated.

Multidisciplinary specialty care is an effective way to improve the quality of nursing care. Through the collaboration of different departments and fields of nursing care, specialized and personalized clinical care programs are provided to patients, and significant results have been achieved in improving the quality of hospital development. In recent years, some domestic studies have confirmed the feasibility of multidisciplinary specialty nursing in postoperative recovery of meningioma, esophageal cancer and other tumors. Surprisingly, this mode has sporadically applied and reported in pancreatic cancer. To this end, the present study aims to analyze the effects of multidisciplinary specialized nursing care on

the short and long-term postoperative quality of life in patients with pancreatic cancer.

2 MATERIALS AND METHODS

2.1 Study Design and Participants

Eighty-eight patients with pancreatic cancer who were hospitalized in our hospital from January 2021 to January 2022 were enrolled. Participants were assigned to 2 groups in a 1:1 ratio and were randomized through a password-protected web-based system. Once patients have completed screening and baseline data collection, investigators access the randomization site using a unique user name and password. Treatment assignment was concealed from patients, investigators, and site staff. All patients were randomized in a ration of 1:1 into a routine group ($n=44$) and a specialized group ($n=44$).

2.1.1 Ethical Considerations

The study procedures were conducted in strict line with the protocols of the Declaration of Helsinki and is registered at www.controlled-trials.com. The study protocol and all amendments were approved by the appropriate ethics committee. All participants provided written informed consent prior to enrollment.

2.1.2 Sample Size Estimation

An estimation of that 44 patients were assigned to receive routine care and 44 patients were assigned to receive specialized care would result in more than 99% power to detect inter-group differences in observed indices in this study.

2.1.3 Inclusion and Exclusion Criteria

Inclusion criteria: (1) Patients were pathologically confirmed with pancreatic cancer in our hospital and received surgical treatment; (2) The patients and their family members were informed about this study and voluntarily participated in this study.

Exclusion criteria: (1) Presence of other serious organ diseases; (2) Psychiatric diseases or communication disorders; (3) Surgery-related contraindications; (4) Coagulation disorders; (5) Tumors at other site; (6) Women during pregnancy or breastfeeding.

2.2 Methods

Patients in the control group received routine nursing care, which includes harmonious nurse-patient relationship establishment, ward sanitation, routine medication instruction, and activity guidance.

Patients in the specialized group were intervened with the multidisciplinary specialized nursing programme. (1) Nursing staff should develop a targeted care plan through multidisciplinary teamwork. Members of the multidisciplinary team should discuss the difficult

points in the care of pancreatic cancer patients and the different conditions of different patients, so as to develop a specialized care plan to consolidate the treatment outcomes^[5]. (2) Perioperative nursing: a: Health education. Nursing staff should educate patients on specific procedures of perioperative treatment and care, as well as the benefits of multidisciplinary professional care programs and ways of cooperation, using various forms such as written, oral, and multimedia, depending on the education level and age of different patients^[6]. b: Preoperative bowel preparation. Patients are required to fast from solid food for 6 hours and from water for 2 hours prior to surgery. c: Early phase of feeding. Nursing staff should remove the gastric tube 1-2 days after surgery, give the patient liquid food on the same day, semi-liquid food on the next day, and gradually give the patient regular food. Nursing staff should assess the patient's diet and nutritional status and administer oral enteral nutrition to the patient if necessary^[7]. d: Early phase of extubation. The urinary catheter was removed within 1 day after surgery and the deep venous catheter was removed within 3 days. e: Early activity. After surgery, nursing staff should assess the patient's ability to care for himself/herself daily and implement an early activity program for him/her in an appropriate manner. The early activity program includes: sitting up in bed 6 hours after surgery; standing at the bedside 1 day after surgery; moving around the bedside for more than 1 hour/day 2 days after surgery; and moving around the ward for more than 2 hours/day 3 days after surgery^[8]. (3) Controllable factor intervention: a: Psychological and sleep interventions. Nursing staff should collaborate with psychologists to provide psychological counseling and cognitive-behavioral interventions to patients. This can help patients fully understand and recognize the preventability and controllability of their disease, thus effectively increasing their confidence in subsequent treatment^[9]. Nursing staff should assist patients in using walking management gadgets such as cell phones and urge them to develop the habit of walking for half an hour each in the morning and evening; they can instruct patients to learn some simple movements such as Tai Chi and Yoga; they should also instruct patients with sleep disorders to do appropriate relaxation exercises before bedtime. All of the above methods can help patients to sleep healthily. If necessary, caregivers can adopt the appropriate use of sleeping pills^[10]. b: Pain interventions. Nursing staff should cooperate with pain specialists for standardized pain management and implement a preventive, timely, multimodal analgesic program for perioperative patients. For patients with cancer-related chronic pain, nursing staff should control patients' pain scores within 3 points, thus effectively improving patients' comfort level^[11]. c: Nutritional interventions. Nursing staff should provide individualized nutritional support to patients at high risk for malnutrition or adverse reactions to enhance their immune function and relieve their fatigue^[12]. (4) Follow-up management: a: Before the patients were discharged,

the nursing staff should inform them of the follow-up plan and register their valid phone numbers. b: On the day of discharge, nursing staff should give patients a follow-up contact card and inform them that they can use this card for 24-hour consultation through various channels^[13]. c: The nursing staff should conduct telephone follow-up visits every two weeks during the first month after the patient's discharge from the hospital and once a month thereafter. Medical staff should carefully assess the patient's home care based on the follow-up records and provide guidance on matters related to the patient's encounters. d: The follow-up nurse should finish organizing and annotating the information in a serious and responsible manner, and point out the focus of attention for the next follow-up visit^[14].

2.3 Outcomes

(1) Surgery-related indicators. They included the recovery time of gastrointestinal function, bed rest time, and hospitalization time. All the above time indicators were recorded by the relevant medical staff of our hospital. (2) Short and long-term quality of life. European Organization for Research and Treatment of Cancer Quality of Life Questionnaire Core 30 (EORTC) version 3.0 was used to assess key outcomes of interest. This 30-item questionnaire consists of an overall global health status/QoL score, five functioning scores (physical, role, emotional, cognitive, and social functioning), and three composite symptom scores (fatigue, nausea, and vomiting). In addition, six single-symptom items are assessed (pain, dyspnea, insomnia, appetite loss, constipation, and diarrhea). The global health status score uses a seven-point Likert scale ranging from 'very poor' to 'excellent', and the remaining items in the EORTC use a four-point Likert scale ranging from 'not at all' to 'very much'. Items are scored 0-100 points, with a higher score representing better QoL in accordance with the scoring manual. (3) Adverse reactions. It includes incision infection, abdominal infection and gastrointestinal bleeding.

2.4 Statistical Analysis

176. Analyses were performed with IBM SPSS statistics 24.0 and Stata 16. The numerical variables are described as means, median, standard deviations, and ranges. Categorical variables are described as frequencies and between-group differences compared by chi-square tests. Normality of the continuous variables was checked with the Kolmogorov-Smirnov test. Between-group comparison of normally distributed variables was done by *t*-test; nonnormal distributed variables were compared by Mann-Whitney *U* test. A *P* value of less than 0.05 ($P < 0.05$) implies the existence of a statistically significant difference.

3 RESULTS

3.1 Patients Profile

In the control group, there were 27 males and 17 females aged 40-83 years, with an average age of

Table 1. Comparison of General Data (mean±SD)

	Routine Group (n=44)	Specialized Group (n=44)	t/χ ²	P
Gender			0.188	>0.05
Male	27	25		
Female	17	19		
Age (years)	40-83	42-81		
Average age (years)	65.47±3.28	65.38±3.39	0.127	>0.05
Disease course (months)	1-12	2-14		
Average disease course (month)	5.17±1.26	5.23±1.31	-0.219	>0.05

65.47±3.28 years; the disease course was 1-12 months, with an averaged of 5.17±1.26 months. In the specialized group, there were 25 males and 19 females aged 42-81 years, with an average age of 65.38±3.39 years; the disease course was 2-14 months, with an average of 5.23±1.31 months (Table 1).

3.2 Comparison of Surgery-related Indices

The time to recovery of gastrointestinal function, bed rest and length of hospital stay were substantially shorter in the specialized group than in the routine group ($P<0.05$, Table 2).

3.3 Comparison of Short and Long-term Quality of Life

Before the intervention, there was no significant difference in the quality of life between the two groups ($P>0.05$); At both 3 months and 1 year after the intervention, patients in the specialized group had a higher quality of life than those in the conventional group ($P<0.05$, Table 3).

3.4 Comparison of Adverse Reactions

The total incidence of adverse responses was substantially lower in the specialized group than in the routine group ($P<0.05$, Table 4).

4 DISCUSSION

Pancreatic cancer is one of the common malignant tumor diseases in clinical practice, constituting considerable morbidity and mortality. Since pancreatic cancer has hidden symptoms in the early stage, most patients are already in the middle to late stage when they are diagnosed^[15]. Radical resection is currently an important means to prolong the survival time of pancreatic cancer patients. However, because the pancreas is a vascular-rich organ, it poses immense difficulty for surgical operation, and the tissue near the lesion is easily damaged during resection, which increases the occurrence of postoperative complications. In order to ensure safe, successful and effective surgery and enable patients to obtain good postoperative recovery, it is crucial to implement effective nursing interventions^[16,17].

Pancreatic cancer is a complex disease with an

unpromising prognosis, which complicates postoperative treatment and care^[18,19]. The multidisciplinary care model not only gives full play to the professional advantages of each department and effectively solves patients' care problems, but also promotes technical exchanges between departments and the growth and learning of the departments themselves through mutual assistance and cooperation^[20,21].

In this study, the recovery time of gastrointestinal function, bed rest time and hospitalization time of patients in the study group were significantly shorter than those in the conventional group; the quality of life of patients in the study group was higher than that of patients in the conventional group at 3 months and 1 year after the intervention. The overall incidence of adverse reactions in the study group was significantly lower than that in the conventional group. This study fully demonstrated the role of multidisciplinary professional care in promoting early recovery and improving the prognosis of patients, as well as its effectiveness in reducing the incidence of adverse reactions in patients. The reasons for this are listed below. (1) Multidisciplinary specialty care can effectively improve coordination and communication between nurses and patients by providing psychological counseling and multifaceted cognitive interventions to patients before surgery. This not only improves the patient's subjective motivation and compliance with treatment, but also keeps the patient in a relatively soothing state physically and mentally, which has a significant effect on improving the patient's mood^[22]; (2) Multidisciplinary professional care provides patients with guidance on rehabilitation exercises and helps them to develop good habits, which can have a positive impact on the subsequent improvement of the patient's quality of life^[23]; and (3) Multidisciplinary specialty care, based on various controllable factors, guides and intervenes in the postoperative period to facilitate their subsequent recovery to a certain extent and prevent their possible risk of adverse reactions, thus significantly reducing the overall incidence of adverse reactions in patients^[24].

Pancreatic cancer is characterized by difficult diagnosis, short course, rapid progression and high

Table 2. Comparison of Surgery-related Indicators (mean±SD)

Group	Number of Cases	Gastrointestinal Function Recovery Time (day)	Bed Rest Time (day)	Length of Hospital Stay (day)
Routine Group	44	5.88±1.08	6.21±0.54	15.82±3.64
Specialized Group	44	3.42±0.65	4.30±0.39	11.71±2.07
<i>t</i>	-	12.945	19.02	6.511
<i>P</i>	-	<0.05	<0.05	<0.05

Table 3. Comparison of Short and Long-term Quality of Life (mean±SD, scores)

Indicators	Time	Routine Group (n=44)	Specialized Group (n=44)	<i>t</i>	<i>P</i>
Physical function	Before intervention	53.46±8.66	52.97±8.59	0.266	>0.05
	3 months after intervention	61.75±8.63	66.34±10.72	-2.212	<0.05
	1 year after intervention	70.82±10.33	78.47±10.94	-3.373	<0.05
Emotional function	Before intervention	48.68±7.69	49.12±7.82	-0.266	>0.05
	3 months after intervention	57.64±8.74	64.67±7.19	-4.12	<0.05
	1 year after intervention	62.87±10.71	73.42±10.46	-4.675	<0.05
Cognitive function	Before intervention	60.48±7.11	60.51±7.15	-0.02	>0.05
	3 months after intervention	65.72±7.54	70.58±9.49	-2.66	<0.05
	1 year after intervention	72.13±9.56	76.71±11.46	-2.036	<0.05
Social function	Before intervention	49.46±5.21	49.37±5.18	0.081	>0.05
	3 months after intervention	54.59±5.91	61.57±5.87	-5.558	<0.05
	1 year after intervention	62.44±5.79	68.72±6.83	-4.652	<0.05
Overall health status	Before intervention	42.72±5.11	42.80±5.23	-0.073	>0.05
	3 months after intervention	50.52±4.79	57.52±5.33	-6.479	<0.05
	1 year after intervention	56.58±5.97	61.82±6.39	-3.975	<0.05

Table 4. Comparison of Adverse Reactions [n (%)]

Group	Number of Cases	Incision Infection	Abdominal Infection	Gastrointestinal Bleeding	Total Incidence
Routine Group	44	2	1	2	5 (11%)
Specialized Group	44	0	0	0	0 (0%)
χ^2	-	-	-	-	5.301
<i>P</i>	-	-	-	-	<0.05

risk of death, and there is a great need to implement multidisciplinary specialized care programs for patients with pancreatic cancer. Multidisciplinary specialized care programs have a good effect on the prognosis of pancreatic cancer patients and have been recommended by many clinical guidelines^[25]. In addition, it is well known that excessive mental stress can disrupt autonomic function, affect intestinal peristalsis and lead to spasmodic constriction of blood

vessels in the gastrointestinal wall, thus causing a series of gastrointestinal disorders. The pancreas, in turn, is an important digestive organ that plays an important role in maintaining endocrine homeostasis. Therefore, improving the psychological status of patients is beneficial to promote the recovery of gastrointestinal function after pancreatic cancer surgery. For this reason, this study cooperated with professional psychologists to participate in the postoperative care of pancreatic cancer

patients, analyzed patients' mentality and behavior from a professional perspective, and gave corresponding psychological counseling to reduce the risk factors affecting gastrointestinal function^[26,27].

Unlike traditional care, this study used multidisciplinary specialty care to provide targeted interventions according to the different symptoms and physical conditions of the patients. In addition, out of concern for the patients' emotional problems, this study also combined tai chi and yoga training to provide appropriate emotional and spiritual interventions to soothe the patients. This study examines the role of multidisciplinary specialty care in postoperative pancreatic cancer patients and provides some suggestions for the rehabilitation of postoperative pancreatic cancer patients.

However, the generalizability of these findings is limited in that we included a smaller sample size. Additionally, whether longer intervention duration would have produced even higher response and favorable outcome remains unknown due to the comparatively short observation time. Taken together, the authors recommend that the current findings be interpreted with caution, with further studies clearly warranted.

5 CONCLUSION

In conclusion, multidisciplinary specialty care represents a reliable intervention approach for postoperative pancreatic cancer patients. It improves perioperative indices, boots patients' short- and long-term postoperative quality of life, and reduces the incidence of patients' adverse reactions.

Acknowledgements

Not applicable.

Ethical Statement

The study was conducted in accordance with the Declaration of Helsinki, and the protocol was approved by the Ethics Committee of Henan Provincial People's Hospital.

Conflicts of Interest

The authors declared no conflict of interest.

Data Availability

All data generated or analyzed during this study are included in this published article.

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Author Contribution

Wang S and Wu M contributed to the manuscript and approved the final version.

Abbreviation List

MDT, Multidisciplinary treatment

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