International Journal of Biology and Life Sciences
ISSN: 2957-9511 | Vol. 12, No. 2, 2025

Study on Psychological Intervention and Nursing Path Optimization of Patients with Acute Pancreatitis

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Abstract: Acute pancreatitis (AP) is a common digestive system emergency, often accompanied by severe abdominal pain, nausea, vomiting and other symptoms. With the change of lifestyle and the aging of population, its incidence rate is on the rise, which has become an important public health problem. The aim of this research is to investigate the impact of psychological interventions and improved nursing protocols on the mental health and clinical results of patients with AP. Utilizing a prospective randomized controlled trial approach, 120 AP patients who fulfilled the inclusion criteria were categorized into an intervention group (IG) and a control group (Control group). Beyond standard care and nursing practices, the IG received comprehensive psychological support and an enhanced nursing pathway, encompassing organized psychological therapy and stage-specific nursing care with defined objectives. The IG demonstrated significantly lower scores on the Self Rating Anxiety Scale (SAS) and Self Rating Depression Scale (SDS), alongside diminished pain, shorter hospitalizations, fewer complications and readmissions, and enhanced nursing satisfaction. Research has shown that psychological intervention combined with nursing pathway optimization can effectively improve the psychological state and physiological recovery of AP patients, and has good clinical promotion value.

Keywords: Acute Pancreatitis; Psychological Intervention; Nursing.

1. Introduction

Acute Pancreatitis (AP) is a common emergency of digestive system, which is characterized by acute inflammatory reaction of pancreas, often accompanied by severe abdominal pain, nausea and vomiting [1]. According to different etiology, AP can be divided into biliary, alcoholic, hyperlipidemia and other types [2]. In recent years, with the change of lifestyle and the aging of population, the incidence of AP is on the rise and has become one of the important public health problems in the world. AP not only has a serious impact on patients' physiological functions, but also may lead to serious psychological problems, such as anxiety, depression and fear, which in turn may affect patients' treatment compliance and rehabilitation process [3-4].

In the treatment of AP, besides active drug therapy and surgical intervention, psychological intervention and optimization of nursing path are also particularly important [5]. Effective psychological interventions can assist patients in mitigating adverse emotions, bolstering their confidence in therapy, and enhancing their quality of life. A scientific and rational nursing protocol can elevate nursing efficiency, diminish complications, curtail hospital stays, and lower healthcare expenses. Therefore, it is of great clinical significance and social value to explore the influence of psychological intervention on the psychological state of AP patients and to optimize the nursing path for the prognosis of patients.

2. Research Method

2.1. Research Design

The design scheme of prospective randomized controlled trial was adopted. Patients with AP who met the inclusion criteria were randomly divided into two groups:

1) On the basis of routine treatment and nursing of AP, the intervention group (IG) implemented systematic psychological intervention and optimized nursing path.

2) The control group (Control group) only received routine treatment and nursing of AP.

The study period covers patients from admission to one month after discharge. To evaluate the effect of psychological intervention and nursing path optimization by comparing the psychological indicators, clinical outcomes and satisfaction data of patients in the two groups before and after intervention and during follow-up period. This research plan has been submitted to the hospital ethics committee for approval, and all patients in the group have signed informed consent.

2.2. Research Objects

Inclusion criteria:

1) Age 18-75 years old, regardless of sex;

2) Meet the diagnostic criteria of AP in China AP Diagnosis and Treatment Guidelines;

3) The severity of AP is classified as mild or moderate (excluding those with short life expectancy of critical illness);

4) Clear consciousness and basic communication and understanding skills;

5) The patient volunteered to participate in this study and signed the informed consent form.

Exclusion criteria:

1) Complicated with severe heart, liver, kidney and other important organ failure;

2) Accompanied by a history of mental illness or cognitive impairment, unable to cooperate with the completion of questionnaire survey and psychological intervention;

3) Pregnant or lactating women;

4) The expected hospitalization time is less than 72 hours or discharged automatically.

Based on the pre-experiment and related literature data, the effect quantity, α error and test efficiency (1-β) were set and estimated by PASS software. The required sample size of each

group is about 50-60 cases, and the total sample size is 100-120 cases, and the shedding rate of 10%-15% is considered.

2.3. Intervention Measure

In the CG, AP routine nursing was carried out, including vital signs monitoring, pain management, fasting water and gastrointestinal decompression nursing, fluid resuscitation and nutritional support, medication nursing, health education (disease knowledge and lifestyle guidance) and so on.

On the basis of routine nursing, the IG implemented the following comprehensive intervention measures:

A Structured psychological intervention

a. Admission evaluation and relationship building. Within 24 hours of admission, a trained specialist nurse or psychotherapist will conduct a preliminary psychological assessment to establish a trust relationship.

b. Cognitive behavior intervention. Health education and cognitive reconstruction. Illustrated manuals and videos are used to explain the etiology, treatment process and prognosis of AP in detail, so as to correct patients' wrong cognition of the disease and reduce their fear. Pain coping skills training. Instruct patients to use non-drug methods such as deep breathing, meditation and music therapy to assist analgesia and enhance their sense of self-control over pain. Anxiety/depression management. Identify patients' negative automatic thinking, teach relaxation skills and help them cope with the uncertainty in the treatment process.

c. Supporting psychotherapy. Create an open communication environment, encourage patients to express their inner worries and emotions, and give empathy, support and positive attention.

d. Mobilization of family and social support system. Encourage family members to participate in the patient's nursing process, provide communication skills guidance to family members, and jointly provide emotional support for patients.

B Nursing path optimization

Based on the concept of clinical pathway, the "AP Optimized Nursing Pathway Table" was formulated and implemented, and the nursing focus, frequency and responsible person in each stage (acute stage, recovery stage and discharge preparation stage) were defined.

a. Acute phase (1-3 days after admission). Nursing focuses on rapid assessment, pain control, fluid management and psychological comfort. Psychological intervention focuses on emotional stability and building trust.

b. Recovery period (after symptoms are relieved). The focus of nursing shifted to nutritional support (oral feeding guidance), activity guidance and complication prevention. Psychological intervention focuses on disease cognitive education and rehabilitation confidence building.

c. Preparation period for discharge and follow-up. Make a personalized discharge plan and give detailed home care guidance. Establish a WeChat follow-up group, conduct telephone or online follow-up one week and one month after discharge, and continue to provide psychological support and rehabilitation counseling.

2.4. Data Collection

Data collection is carried out by research assistants who have received unified training and are unaware of the grouping situation (blind evaluation). Collect the baseline data of patients at the time of admission, covering demographic and sociological characteristics and clinical information related to diseases; The main observation indicators are psychological status and pain level. The psychological status is evaluated using the Self Rating Anxiety Scale (SAS) and the Self Rating Depression Scale (SDS) at admission (T0), discharge (T1), and one month after discharge (T2), respectively; The degree of pain was dynamically monitored using visual analogue scale (VAS) within 24 hours and daily after admission. Secondary observation indicators include clinical indicators, treatment compliance, and nursing satisfaction. The hospitalization time, complication rate and readmission rate within one month after discharge were recorded as the evaluation basis of clinical outcome. The compliance of treatment was evaluated by the nurse's observation record form in terms of diet, medication and activities. Nursing satisfaction was evaluated by the Inpatients' Nursing Satisfaction Questionnaire developed by our hospital when the patients were discharged from hospital, so as to understand the patients' overall feelings and satisfaction with nursing services.

2.5. Statistical Analysis

Data were analyzed using SPSS 25.0. Normally distributed measurement data were expressed as mean ± standard deviation ($\bar{x} \pm s$). Inter-group comparisons were conducted using the independent sample t-test, whereas intra-group comparisons across time points were performed with repeated measures analysis of variance. Non-normally distributed data were reported as median (interquartile range) [M (IQR)] and assessed via non-parametric methods (Mann-Whitney U test, Wilcoxon signed-rank test). Categorical variables were presented as counts (percentages) and evaluated using the chi-square test. A two-tailed test was applied for all analyses, and statistical significance was set at $P < 0.05$.

3. Result

3.1. Comparison of Baseline Data between Two Groups of Patients

Table 1. Comparison of baseline data between the two groups (x s/n (%))

Project	IG (n=58)	CG (n=59)	t/χ^2 value	P value
Age (years old, x ±s)	52.4 ± 11.8	50.9 ± 12.5	0.681	0.497
Sex (n,%)			0.172	0.678
Male	32 (55.2%)	35 (59.3%)		
Female	26 (44.8%)	24 (40.7%)		
Cause (n,%)			0.886	0.642
Biliary origin	28 (48.3%)	25 (42.4%)		
Hyperlipidemic type	22 (37.9%)	26 (44.1%)		
Alcoholic and other substances	8 (13.8%)	8 (13.6%)		
Admission APACHE-II score (x ± s)	8.5 ± 2.3	8.7 ± 2.1	-0.504	0.615
Admission SAS standard score (x ± s)	62.5 ± 6.8	61.8 ± 7.2	0.552	0.582
Admission SDS standard score (x ± s)	60.8 ± 7.1	59.9 ± 6.5	0.722	0.472

A total of 120 patients with acute pancreatitis (AP) were randomly assigned to either an intervention or a CG, with 60 participants in each. During the study, two participants in the IG withdrew (one due to hospital transfer and one to loss to follow-up), and one participant in the CG withdrew because of loss to follow-up. In total, 117 patients finished the trial—58 in the IG and 59 in the CG.

As shown in Table 1, no statistically significant differences were observed between the two groups in baseline characteristics, including age, sex, etiology, APACHE-II score, SAS score, and SDS score ($P > 0.05$), confirming their comparability.

3.2. Comparison of Psychological State Scores Between Two Groups of Patients

Repeated measures ANOVA indicated significant time effects, group effects, and interaction effects between the two groups ($P < 0.01$). Pairwise comparisons (see Table 2) showed no significant differences in SAS and SDS scores between the groups at admission (T0). By discharge (T1) and one month post-discharge (T2), both groups exhibited significantly lower SAS and SDS scores compared to baseline ($P < 0.05$); however, the IG demonstrated a significantly greater reduction than the CG ($P < 0.01$).

Table 2. Comparison of SAS and SDS scores between two groups of patients at different time points (x ± s, points)

Group	Number of cases	SAS standard score	SDS standard score		
		T0 (Admission)	T1 (discharged from hospital)	T2 (Follow-up)	T0 (Admission)
IG	58	62.5±6.8	45.2±5.1##	41.8±4.3##	60.8±7.1
CG	59	61.8±7.2	54.7±6.3#	52.1±5.9#	59.9±6.5
$F^{mutually}$ value/P value		18.36 / <0.001			15.94 / <0.001
t^{T1}value/Pvalue (Comparison between groups)		8.923 / <0.001			6.874 / <0.001
t^{T2}Value /P value (Comparison between groups)		10.245 / <0.001			7.562 / <0.001

Note: #P<0.05, ##P<0.01 compared with T0 in this group.

3.3. Comparison of Clinical Indexes Between Two Groups of Patients

As indicated in Table 3, compared to the CG, patients in the IG experienced a significant reduction in average pain VAS score by the third day following admission ($P<0.01$), a notable shortening of average hospital stay ($P<0.05$), and a significantly lower incidence of complications and readmission rate within one month post-discharge ($P<0.05$).

Table 3. Comparison of clinical indexes between two groups of patients

Project	IG (n=58)	CG (n=59)	Statistical value	P value
Pain VAS score (points, x ± s)				
Within 24 hours of admission	7.8 ± 1.2	7.9 ± 1.1	t=0.492	0.624
On the third day of admission	3.5 ± 0.9	4.8 ± 1.3	t=6.324	<0.001
Average length of hospital stay (days, x ± s)	10.5 ± 2.6	12.8 ± 3.1	t=4.317	0.018
Incidence of complications (n, %)	3 (5.2%)	10 (16.9%)	χ^2=4.214	0.040
Readmission rate (n, %)	1 (1.7%)	6 (10.2%)	χ^2=3.885	0.049

3.4. Comparison of Nursing Satisfaction Between Two Groups of Patients

Results from the discharge satisfaction survey indicated that overall nursing satisfaction reached 98.3% (57/58) in the IG, significantly surpassing the 86.4% (51/59) observed in the CG (χ^2=5.981, P=0.014).

4. Discussion

The results of this study show that systematic psychological intervention combined with nursing path optimization can significantly improve patients' anxiety and depression, relieve pain, shorten hospitalization time, reduce complications and readmission rate, and improve nursing satisfaction, which has good clinical promotion value.

First of all, psychological intervention effectively eased the negative emotions of patients. The onset of AP is acute and the symptoms are severe. Patients often have anxiety and depression because of severe pain, uncertainty of illness and worries about prognosis. Through structured psychological intervention (such as cognitive behavioral therapy, relaxation training, family support, etc.), this study helps patients to rebuild their correct understanding of the disease, enhance their sense of self-efficacy, significantly reduce SAS and SDS scores, and the effect can last for one month after discharge, suggesting that psychological intervention has a long-term positive impact.

Secondly, the optimization of nursing path improves the overall nursing quality. By defining the nursing focus in stages, strengthening early pain control, nutritional transition and prevention of complications, the patients in the IG are better than those in the CG in pain relief speed, hospitalization time and complications control. In addition, the establishment of follow-up mechanism after discharge is also helpful to identify risks early and reduce the rate of readmission.

It is worth noting that the nursing satisfaction of the IG is significantly improved, which reflects the patients' enhanced sense of identity with nursing services, which is conducive to building a good nurse-patient relationship and improving treatment compliance.

To sum up, the combination of psychological intervention and nursing path optimization not only improves the psychological state of AP patients, but also promotes their

physiological recovery, which embodies the modern nursing concept of "physical and mental care". In the future, its universality and sustainability can be further verified in larger sample and multi-center research.

5. Conclusion

This study confirmed through prospective randomized controlled trials that the implementation of structured psychological intervention combined with nursing path optimization in AP patients can significantly improve their anxiety and depression, reduce the degree of pain, shorten the hospitalization time, reduce the risk of complications and readmission, and significantly improve nursing satisfaction. This intervention model embodies the modern nursing concept of "physical and mental care", which has good clinical promotion value and provides evidence-based basis for psychological support and nursing management of AP patients.

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