

# World Journal of *Clinical Cases*

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Retrospective Study

# Influence of standardized nursing intervention combined with mindfulness stress reduction training on the curative effect in patients with acute pancreatitis

Sha Li, Dan Yin, Xiao-Chun Guo

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## Abstract

### BACKGROUND

Acute pancreatitis (AP) is a common inflammatory disease of the pancreas with high mortality rates. It is of great significance to take scientific intervention measures for patients with AP in time.

### AIM

To explore the effect of standardized nursing combined with mindfulness stress reduction training on the curative effect, negative emotion, and quality of life in patients with acute pancreatitis.

### METHODS

A total of 80 patients with acute pancreatitis admitted to The First People's Hospital of Jiangxia District Hospital from May 2021 to May 2023 were randomly divided into control group and observation group ( $n = 40$ ). Patients in control group were given the standardized nursing intervention, and the observation group were given standardized nursing plus mindfulness stress reduction training intervention. The time of clinical symptom disappeared or improved, complication occurrence rate, emotional state, and quality of life score of the two groups were observed and compared.

### RESULTS

In comparison with the control group, the bowel sound recovery time, ventosity



and abdominal pain improvement time, and venting and cacaion time in observation group were shorter, and the total incidence rate of complications was reduced, showing statistically significant difference ( $P < 0.05$ ). The scores of anxiety and depression in observation group were lower than those in control group ( $P < 0.05$ ). Serum levels of tumour necrosis factor alpha, interleukin (IL)-6, IL-1 $\beta$  and IL-8 in observation group were lower than those in control group ( $P < 0.05$ ). The scores of life quality in physiology, psychology, environment and social relations in observation group were higher than those in control group, and the differences were statistically significant ( $P < 0.05$ ).

## CONCLUSION

The application of standardized nursing intervention combined with mindfulness stress reduction training in patients with acute pancreatitis has a definite effect, which can help to ameliorate the clinical symptoms, anxiety and depression of patients, reduce the incidence rate of complications, and improve the prognosis of patients.

**Key Words:** Acute pancreatitis; Standardized nursing; Mindfulness stress reduction training; Negative emotion; Quality of life

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**Core Tip:** Acute pancreatitis is a destructive inflammatory condition of the pancreas in gastroenterology. In this study, after intervention of standardized nursing combined with mindfulness stress reduction training, the total incidence rate of complications, the scores of anxiety and depression, and levels of serum inflammatory cytokines were decreased, and the scores of life quality was elevated, suggesting that the combined intervention of standardized nursing and mindfulness stress reduction training is beneficial to reduce complications and negative emotions, as well as improve quality of life.

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## INTRODUCTION

Acute pancreatitis is a common acute severe disease in the department of gastroenterology[1]. It is mainly caused by a variety of pathogeny, such as biliary tract diseases, alcohol consumption, hyperlipidemia, infectious factors, autoimmune diseases, *etc.*, and produces local inflammatory response after being applied to pancreatic tissue[2-4]. The disease has a sudden onset and rapid progression, and is easily accompanied by complications such as peritonitis, secondary infection and shock, which may even endanger the life safety of patients if not treated in time[4,5]. The clinical treatment process can produce a variety of serious complications, and patients are prone to anxiety, depression and other emotions[6], so the treatment should be included scientific and reasonable nursing mode intervention.

With the continuous development of the bio-psycho-social medical model, the application of the psychological intervention technology of mindfulness stress reduction training has attracted extensive attention of scholars[7]. Mindfulness is a method of self-regulation by being aware of your thoughts, actions, and behaviors without judgment[8]. Mindfulness stress reduction training is a training method formed on the basis of mindfulness theory, through intensive meditation practice to help trainers cope with stress and manage emotions, and ultimately achieve the purpose of improving physical and mental problems[9,10]. At present, there are few studies on mindfulness stress reduction training in the treatment of acute pancreatitis. Therefore, it is of great significance to explore the effect of standardized nursing intervention combined with mindfulness stress reduction training in the treatment of patients with acute pancreatitis.

This study selected 80 patients with acute pancreatitis admitted to the gastroenterology department of our hospital from May 2021 to May 2023, aiming to explore the effects of standardized nursing intervention combined with mindfulness stress reduction training on the improvement of clinical symptoms, negative emotions, and life quality of patients with acute pancreatitis, and provide reference for improving the efficacy of patients with acute pancreatitis.

## MATERIALS AND METHODS

A total of 80 patients with acute pancreatitis admitted to the gastroenterology department of our hospital were selected and randomly divided into control group and observation group. The control group contains 40 patients, including 23 male patients and 17 female patients, the average age was ( $33.52 \pm 6.35$ ) years old, and the mean course of disease was ( $39.25 \pm 5.40$ ) h. The observation group consisted of 40 patients, including 24 male patients and 16 female patients, the average age was ( $32.95 \pm 6.20$ ) years old, and the mean course of disease was ( $39.45 \pm 5.34$ ) h. There was no significant difference in gender, age and other general data between the two groups ( $P > 0.05$ ), indicating comparability. This study

has been approved by the Ethics Committee of XX Hospital.

Inclusion criteria: (1) All the patients met the relevant diagnostic criteria in the Chinese Guidelines for Diagnosis and Treatment of Acute Pancreatitis (Shanghai, 2013); (2) All the patients have normal cognitive and communication functions; (3) All the patients have signed the informed consent and can return to the hospital for review regularly; and (4) all the patients have complete clinical data. Exclusion criteria: (1) Patients with severe organ diseases; (2) Patients with mental disorders or diseases; (3) Patients with malignant tumors or systemic immune diseases; and (4) Patients cannot cooperate with the experimental researcher.

## Methods

The two groups of diagnosed patients were treated with routine symptomatic treatment, including fluid rehydration, nutritional support, spasmodic, pain relief, gastrointestinal decompression, jejunal nutrition tube, *etc.*

Control group: Patients in control group received standard nursing intervention, and the intervention services included timely observation of the condition at admission, psychological nursing, and diet nursing. Patients with abdominal distension and abdominal pain were given guidance on abdominal muscle relaxation, analgesic drugs, and ventilation and defecation status of patients were closely monitored. Closely observed the gastrointestinal decompression tube of the patient to ensure that the drainage tube was smooth and ensure the continuity of gastrointestinal decompression. The intake and outflow were recorded in detail for 24 h, and appropriate blood volume supplementation, water and electrolyte adjustment, acid-base balance treatment were given. The intervention lasted for 6 wk. Before discharge, patients should be given reasonable discharge guidance, and patients should be instructed to maintain good eating habits, adequate sleep, proper exercise, and pay attention to nutritious diet after discharge.

Observation group: Patients in observation group were given mindfulness stress reduction training on the basis of control group. The contents of mindfulness stress reduction training group included as follows: Week 1: A professional psychologist explained the theory to the patients, informed the purpose, process, significance, *etc.* At the same time, distributed relevant materials related to chemical training, narrated the contents including mindful breathing and methods, and discussed how to use mindful introspection to relieve stress in life and work. Week 2: Review and analyze the problems in mindfulness training, explain the purpose, method and significance of walking meditation, teach patients how to apply walking meditation to life, and guide them to complete walking meditation training after class. Week 3: Review and analyze the problems of walking meditation after class, and then guide patients to do mental and physical scanning training to feel various parts of the body. Week 4: Apply the mindfulness meditation training of the previous 3 wk to the classic yoga movements to further experience the mindfulness training. Week 5: Instruct the patient to do zazen training and apply mindfulness meditation to further experience this stress reduction training. Week 6: Review and analyze the learning content of the previous 5 wk with zazen training, share their shortcomings and advantages and solve them one by one. It is required to do training at least once a week, each time about 3 h, the first half hour is a review and analysis, and the self-training after class is not less than 5 d (about 30 min each). The intervention lasted for 6 wk.

Observation indicators: (1) The recovery time of abdominal pain and abdominal distension in the two groups; (2) The occurrence of complications during treatment in the two groups; (3) The anxiety and depression status were evaluated according to the Self-Rating Anxiety Scale (SAS) and Self-Rating Depression Scale (SDS). The higher score of SAS and SDS indicate severer anxiety and depression; (4) The life quality of patients in the two groups was assessed according to the Chinese version of WHO QOL-100. The score relates to 4 areas: Psychological field, physiological field, environmental field and social relations, and the higher score suggest the higher life quality; and (5) Comparison of inflammatory indicators between the two groups: 5 mL of venous blood was collected from the fasting patients of the two groups, centrifuged at 3000 rpm for 10 min to separate serum, and the levels of TNF- $\alpha$ , IL-6, IL-1 $\beta$  and IL-8 in serum were detected by enzyme-linked immunosorbent assay.

Statistical Methods The data in this study were analyzed using SPSS18.0 statistical software. Measurement data were represented by mean  $\pm$  SD, and t-test was performed between groups. The counting data were represented as  $n/\%$  and analyzed by  $\chi^2$  test.  $P < 0.05$  was considered statistically significant.

## RESULTS

### Comparison of general data between the two groups

As shown in Table 1, there was no statistically significant difference between the control group and the observation group in gender, age, body mass index, disease course, the proportion of mild pancreatitis and severe pancreatitis, marital status, educational level, and other general data ( $P > 0.05$ ), indicating that the data of the two groups were comparable.

### Comparison of the recovery time for clinical symptoms and the occurrence rate of complications

Compared with the control group, the recovery time of bowel sound, the disappearance time of abdominal pain and ventosity, and the time of venting and cation were all shortened in the observation group, with statistical significance ( $P < 0.05$ , Figure 1).

In the control group, 5 cases of sedimentary pneumonia (12.50%) and 4 cases of pressure sore (10.00%) occurred, and the total complication rate was 22.50%. In the observation group, there was 1 case of sedimentary pneumonia (2.50%) and 1 case of pressure sore (2.50%), and the total complication rate was 5.00%. The total complication occurrence rate in the observation group was lower than that in the control group ( $P < 0.05$ , Table 2).



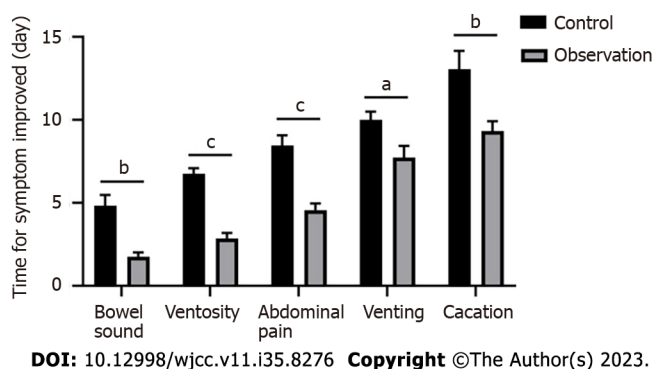
**Table 1 Comparison of patients' general data, *n*, (%)**

General data	Control group ( <i>n</i> = 40)	Observation group ( <i>n</i> = 40)	$\chi^2/t$	<i>P</i> value
Sex, male	23 (57.5)	24 (60.0)	0.043	0.905
Female	17 (42.5)	16 (40.0)		
Age (yr, mean $\pm$ SD)	33.52 $\pm$ 6.35	32.95 $\pm$ 6.20	0.073	0.830
Course of disease (h, mean $\pm$ SD)	39.25 $\pm$ 5.40	39.45 $\pm$ 5.34	0.613	0.503
BMI (kg/m <sup>2</sup> , mean $\pm$ SD)	22.64 $\pm$ 2.16	22.71 $\pm$ 2.11	0.235	0.416
Mild acute pancreatitis	32 (80.0)	34 (85.0)	0.423	0.104
Severe acute pancreatitis	8 (20.0)	6 (15.0)		
Marital status			0.240	0.632
Married	31 (77.5)	33 (82.5)		
Spinsterhood, divorced, widowed	9 (22.5)	7 (17.5)		
Education level			1.231	0.522
Above high school	33 (82.5)	32 (80.0)		
High school and below	7 (17.5)	8 (20.0)		

**Table 2 Comparison of the complication incidence rate, *n* (%)**

Group	<i>n</i>	Sedimentary pneumonia	Pressure sores	Total occurrence
Control	40	5 (12.5)	4 (10.00)	22.50
Observation	40	1 <sup>a</sup> (2.5)	1 <sup>a</sup> (2.5)	5.00 <sup>a</sup>
<i>t</i>		1.535	1.810	2.304
<i>P</i>		0.001	0.003	0.001

<sup>a</sup>Indicates the comparison to control group, *P* < 0.05.



**Figure 1** Time for clinical symptom improved of patients with acute pancreatitis. <sup>a</sup>*P* < 0.05, <sup>b</sup>*P* < 0.01, and <sup>c</sup>*P* < 0.001 vs Control group.

### Comparison of anxiety and depression between the two groups

According to the evaluation of SAS and SDS, the anxiety scores of the observation group were lower than those of the control group, and there was a statistical difference between the two groups (*P* < 0.05). The depression scores of the observation group were lower than those of the control group, with statistical difference between the two groups (*P* < 0.05, Table 3).

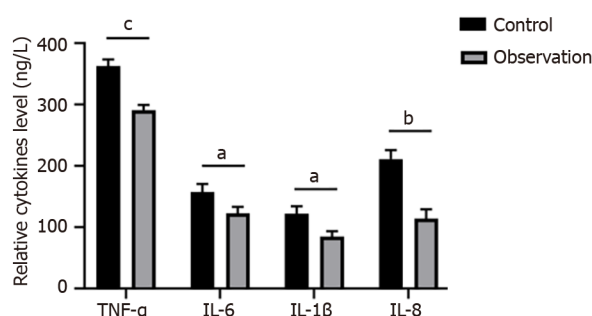
### Comparison of serum inflammatory factors between the two groups

Compared with the control group, the serum levels of tumour necrosis factor alpha (TNF alpha), interleukin (IL)-6, IL-1 $\beta$  and IL-8 in the observation group were all decreased, with statistical differences between the two groups (*P* < 0.05, Figure 2).

**Table 3 Comparison of anxiety and depression (mean  $\pm$  SD, scores)**

Group	n	Self-Rating Anxiety Scale scores	Self-Rating Depression Scale scores
Control	40	50.15 $\pm$ 5.23	51.27 $\pm$ 5.30
Observation	40	45.14 $\pm$ 4.30 <sup>a</sup>	45.76 $\pm$ 4.24 <sup>a</sup>
t		8.652	7.542
P		0.006	0.003

<sup>a</sup>Indicates the comparison to control group,  $P < 0.05$ .



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**Figure 2** Relative expressions of inflammatory cytokines in serum of patients acute pancreatitis. <sup>a</sup> $P < 0.05$ , <sup>b</sup> $P < 0.01$ , and <sup>c</sup> $P < 0.001$  vs Control group.

### Comparison of life quality scores between the two groups

The life quality scores of the two groups were measured during follow-up, and the scores of the observation group in the psychological field, physiological field, environmental field and social relations were higher than those of the control group, with statistical significance ( $P < 0.05$ , Table 4).

## DISCUSSION

With the continuous development of modern society and economy, people's irregular diet is increasing, resulting in the prevalence of acute pancreatitis rising year by year[11,12]. In patients with pancreatitis, the trypsin in the pancreas is activated, leading to edema and bleeding in the tissues around the pancreas, and even produce necrotic inflammatory reactions, which seriously reduces the life quality of patients[13,14]. In addition to clinical treatment, scientific nursing intervention is equally important, while the nursing intervention alone cannot achieve an ideal effect[15,16]. Therefore, on the basis of standardized nursing, more comprehensive and high-quality intervention measures should be taken. In this study, standardized nursing combined with mindfulness stress reduction training was used to intervene patients with acute pancreatitis. Compared with the standardized nursing alone, the recovery time of clinical symptoms in the combined treatment group was shorter, the total incidence of complications was reduced, the levels of serum inflammatory factors were decreased, the scores of anxiety and depression were declined, and the scores of patients' life quality in physiological, psychological, environmental and social fields were increased. These results suggest that combined therapy has a good effect on improving the clinical symptoms, psychological state and life quality of patients with acute pancreatitis.

Mindfulness stress reduction training combines meditation, yoga and other activities, and applies psychological intervention and guidance to achieve the purpose of improving the emotional state of patients[7,17,18]. The training node is calculated by week, guiding patients to do mindfulness training step by step every week, and ensuring that the content of the previous week is reviewed and analyzed before each training, which can effectively divert their attention[19,20]. Here, we found that compared with the control group, the recovery time of bowel sound, ventosity and abdominal pain improvement time, venting time and cacation time of patients in the observation group were shorter, and the total incidence of complications was reduced. The anxiety and depression scores of the observation group were lower than those of the control group. These results indicate that mindfulness stress reduction training combined with standardized nursing intervention can effectively alleviate clinical symptoms and negative emotions in patients with acute pancreatitis. The reason may be that, under the intervention of mindfulness stress reduction, through professional communication methods, patients' cognition of the disease is changed, so as to eliminate bad emotions and divert attention, thereby achieving the effect of soothing the body and mind. Similarly, Sanilevici *et al*[21] reported that mindfulness stress reduction training can improve negative emotions and increase mental health regulation in coronavirus disease 2019

**Table 4 Comparison of life quality scores (mean  $\pm$  SD, scores)**

Group	n	Psychological field	Physiological field	Environmental field	Social relations
Control	40	14.20 $\pm$ 1.23	12.15 $\pm$ 1.30	13.05 $\pm$ 1.14	14.15 $\pm$ 1.30
Observation	40	16.24 $\pm$ 1.40 <sup>a</sup>	15.16 $\pm$ 1.34 <sup>a</sup>	16.32 $\pm$ 1.18 <sup>a</sup>	18.25 $\pm$ 1.26 <sup>a</sup>
t		10.253	9.830	6.424	3.896
P value		0.026	0.004	0.005	0.012

<sup>a</sup>Indicates the comparison to control group,  $P < 0.05$ .

patients.

Additionally, we also found that the levels of serum inflammatory factors TNF- $\alpha$ , IL-6, IL-1 $\beta$  and IL-8 in the observation group were lower than those in the control group, and the life quality score of patients in the observation group was significantly higher than that in the control group, involving physiological fields, psychological fields, environmental fields and social relations. These results indicate that the combination therapy can improve the anti-inflammatory response and social ability of patients. Due to the impact of the disease, the patient's physiology and psychology are greatly destroyed[22,23]. The combination therapy can specifically intervene the patient's situation, and improve the quality of life and psychological state to a certain extent. The combined treatment enables patients to get positive stimulation in both physical and mental aspects, ensuring adequate nutrition can improve various functions of the body, reduce inflammation and enhance immunity, which may be related to mindfulness stress reduction training to eliminate patients' negative emotions and promote patients' self-confidence. A recent study showed that mindfulness stress reduction training can reduce stress and inflammatory cytokine levels in patients with autoimmune hepatitis[24]. Another study reported that mindfulness stress reduction training improved psychological and inflammatory responses in breast cancer patients[25]. These results are basically consistent with the present researches.

## CONCLUSION

In summary, mindfulness stress reduction training combined with standardized nursing can effectively improve clinical symptoms of patients with acute pancreatitis, reduce the incidence of complications, decrease inflammation, improve patients' negative emotions, and improve their quality of life. This kind of combination therapy is effective and beneficial to improve the prognosis of patients, and it is worth promoting. However, there are some limitations in this study. The sample size is a bit small, and the observational indicators such as nursing satisfaction rate and physical rehabilitation indicators are absent. Further studies were needed to overcome these limitations to make the data more convincing.

## ARTICLE HIGHLIGHTS

### Research background

Acute pancreatitis is one of the common acute abdomen in gastroenterology, which has the characteristics of acute onset, severe disease, and rapid change, and is easy to endanger life if not actively treated.

### Research motivation

Psychological intervention care can alleviate negativity in patients with acute pancreatitis. It effectively improves the treatment effect of patients.

### Research objectives

To explore the effect of standardized nursing combined with mindfulness-based stress reduction training on the rehabilitation of patients with acute pancreatitis.

### Research methods

A total of 80 patients in our hospital were retrospectively analyzed, and the recovery of the patients was studied.

### Research results

The results showed significant improvement in all indicators.

### Research conclusions

This study firstly found that the standardized nursing combined with mindfulness stress reduction training had defined curative effect on patients with acute pancreatitis (AP), which ameliorated clinical symptoms, negative emotion, and

quality of life. Our study provide an effective nursing intervention method for AP.

## Research perspectives

AP is one of the most common inflammatory diseases and requires scientific and reasonable intervention measures.

## FOOTNOTES

**Co-first authors:** Sha Li and Dan Yin.

**Author contributions:** Li S contributed to conceptualization, methodology, SoftwarePriya, software; Yin D contributed to data curation, writing- original draft preparation; Guo XC contributed to validation, writing- reviewing and editing. The reasons for designating Li S and Yin D as co-first authors are threefold. First, the research was performed as a collaborative effort, and the designation of co-corresponding authorship accurately reflects the distribution of responsibilities and burdens associated with the time and effort required to complete the study and the resultant paper. This also ensures effective communication and management of post-submission matters, ultimately enhancing the paper's quality and reliability. Second, the overall research team encompassed authors with a variety of expertise and skills from different fields, and the designation of co-first authors best reflects this diversity. This also promotes the most comprehensive and in-depth examination of the research topic, ultimately enriching readers' understanding by offering various expert perspectives. Third, Li S and Yin D contributed efforts of equal substance throughout the research process. The choice of these researchers as co-first authors acknowledges and respects this equal contribution, while recognizing the spirit of teamwork and collaboration of this study. In summary, we believe that designating Li S and Yin D as co-first authors of is fitting for our manuscript as it accurately reflects our team's collaborative spirit, equal contributions, and diversity.

**Institutional review board statement:** This study protocol was approved by the The First People's Hospital of Jiangxia District, and all the families have voluntarily participated in the study and have signed informed consent forms.

**Informed consent statement:** All study participants or their legal guardian provided informed written consent about personal and medical data collection prior to study enrolment.

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