

Original Article

Effects of hospital-family holistic care mode on psychological state and nutritional status of patients with inflammatory bowel disease

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Received August 21, 2023; Accepted October 13, 2023; Epub December 15, 2023; Published December 30, 2023

Abstract: Objective: This study was designed to determine the effects of hospital-family holistic care mode on psychological state and nutritional status of patients with inflammatory bowel disease (IBD). Methods: A retrospective analysis was conducted on the data of 80 patients with IBD treated in The Second Affiliated Hospital of Jiaxing University from May 2021 to November 2022. Among the patients, 37 patients who received conventional care were assigned to a control group and the remaining 43 patients who received hospital-family holistic care were assigned to an intervention group. The changes of psychological state and nutritional status were compared between the two groups before and after intervention. The two groups were also compared in terms of clinical data, serum preprotein (PA) and albumin (ALB) levels, quality of life (QoL), disease cognition level, self-management of patients, and nursing satisfaction. Results: After 6 months of intervention, the intervention group exhibited significantly lower anxiety and depression scores ($P < 0.001$), and significantly higher Crohn's and Colitis knowledge scale and McMaster inflammatory bowel disease questionnaire scores than the control group ($P < 0.001$). The scores of IBD-self-efficacy scale, mini nutritional assessment, and subjective global assessment in the intervention group were all significantly higher than those in the control group after intervention ($P < 0.001$). Also, the intervention group showed significantly higher PA and ALB levels, as well as higher nursing satisfaction than the control group ($P < 0.001$). Conclusion: The hospital-family holistic care mode can substantially improve the management and nursing of patients with IBD through improving self-management ability, maintaining nutritional status, alleviating negative emotions, and elevating QoL.

Keywords: Hospital-family holistic care, inflammatory bowel disease, psychological state, nutritional status

Introduction

Inflammatory bowel disease (IBD) is chronic enteritis mainly involving the digestive system, and its main forms include Crohn's disease and ulcerative colitis [1]. In China, there are approximately 35,000 newly diagnosed IBD patients every year, showing the highest incidence in Asia, and IBD is more common in southern China than in the north, with the affected population mainly concentrating in teenagers and adults [2]. Due to long course of disease and difficulty in treatment, IBD greatly disrupts the quality of life (QoL) of patients and social economy. After discharge, the patients usually need community or family support as long-term health management [3]. Reportedly, for patients with IBD, continuous nursing service can effec-

tively alleviate their clinical symptoms and negative emotions, such as anxiety and depression, enhance their confidence fighting against the disease and their QoL, lower the probability of re-hospitalization, and lift their satisfaction [4]. However, the heavy workload of continuing care service, insufficient nurse resources, and poor exchange of doctor-patient/nurse-patient information result in the slow implementation of continuing care and limited impact [5].

Hospital-family holistic care is a novel nursing mode that extends the nursing service in hospital to home [6]. Besides the hospital, this mode includes the home as a nursing place. Through the cooperation between the hospital and the families, patients can receive continuing care at home [7]. In such a mode, nursing team

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members usually consist of a head nurse and a responsible nurse. The head nurse is tasked with developing and implementing the system, workflow and job responsibilities to ensure the smooth connection between the hospital and the family [8]. The responsible nurse is tasked with completing the daily nursing work and collecting and summarizing relevant information, so as to track and evaluate the patient's conditions. The hospital-family holistic care is advantageous, because it can provide continuing and all-round nursing services for patients with specific diseases. By extending nursing work to families and communities, the mode can improve patients' satisfaction and health level, and reduce the economic and psychological burden caused by frequent hospitalization and treatment [9]. However, whether the hospital-family holistic care improves the psychological state and nutritional status of patients with IBD is still unclear.

The innovation of this study is to introduce and evaluate the hospital-family holistic care mode for patients with IBD. This model not only ensures that patients can get comprehensive professional care during hospitalization and after discharge, but also emphasizes the importance of continuing nursing, interdisciplinary nursing team cooperation, the use of technology, education, and methods to meet patients' psychological needs and improve nutritional status. This study was designed to analyze the effects of the hospital-family holistic care mode on psychological state and nutritional status of patients with IBD, with the purpose of providing reference for choosing a clinical nursing scheme.

Clinical data

Sample selection

The data of 105 IBD patients treated in the Second Affiliated Hospital of Jiaying University from May 2021 to November 2022 were analyzed retrospectively. This study was approved by the medical Ethics Committee of the Second Affiliated Hospital of Jiaying University.

Inclusion and exclusion criteria

Inclusion criteria: patients who were diagnosed with IBD (Crohn's disease and ulcerative colitis) at admission [1]; patients between 18 and 45

years old; and patients without reluctance to receive the provided nursing scheme.

Exclusion criteria: patients comorbid with other serious diseases, such as malignant tumor and severe liver or kidney failure; patients with a history of language communication and understanding disorders, cognitive disorders, or mental illness.

Withdrawal criteria: patients who died during the study; patients who dropped out from the intervention midway.

Sample selection

According to the inclusion and exclusion criteria, 80 patients who met the requirements were included in this study. Among them, 37 patients who received conventional care were assigned to a control group, and the remaining 43 patients who received hospital-family holistic care were assigned to an intervention group.

Nursing schemes

The control group was given routine care for IBD. Specifically, each patient was followed up through the telephone every 7 days to provide guidance, which covered disease-related knowledge guidance, medication guidance, rehabilitation guidance, and psychological care.

The intervention group was given continuing care for IBD based on hospital-family holistic care by an IBD continuing care team in addition to routine care.

Establishment of a continuing care team for IBD: The team consisted of 11 medical workers, including 1 physician with senior title in the digestive medicine department, 2 backbone physicians, 1 IBD surgeon, 1 nutritionist, 1 pharmacist, 1 rehabilitation therapist, 1 psychotherapist, 1 head nurse, and 2 IBD specialist nurses. The physician with a senior title in the digestive medicine department was responsible for controlling and adjusting the treatment plan. Specialists including the backbone physicians, IBD surgeon, nutritionist, pharmacist, rehabilitation therapist, and psychotherapist were responsible for jointly evaluating the physical, psychological, and social conditions of patients with IBD and then develop a con-

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tinuing care plan and provide guidance and answers in related fields. The head nurse was responsible for the organization, coordination and implementation of continuing care. IBD specialist nurses and the team's specialists were arranged to carry out continuing care measures, such as network follow-up and health education.

In the hospital: (1) Before discharge, the IBD specialist nurses were arranged to set up an electronic file of continuing care for each patient with IBD on the network information platform, including basic information of the patient, main caregivers, medical history, medication history, allergic history, vital signs, nutritional status, digestive system performance, parenteral manifestations and complications, psychological state, main nursing challenges, laboratory examination results, functional auxiliary examination results, follow-up records, and other diagnosis and treatment information. (2) Within one week before discharge, the responsible nurse or IBD specialist nurses were arranged to figure out the existing nursing challenges and the nursing needs of each patient after discharge based on the "internet plus-based evaluation form for the continuing care needs of IBD patients" and then determine the priority of the challenges according to Maslow's hierarchy of needs. (3) The continuing care team was required to develop a personalized continuing care plan meeting the needs of the discharged patient based on nursing challenges of each individual patient following the evaluation items and intervention contents of the continuing care, including the popularization of IBD-associated knowledge, medication guidance, nutrition management, exercise rehabilitation guidance, pain care, skin care, psychological support, disease monitoring and reminding, emergency consultation and transition at different stages of the disease course. (4) On the day of discharge, the team shared the patient information and continuing care plan with the community health service center that the patient inhabited, based on the network information platform, and provided remote consultation, appointment and referral services, physiological index monitoring, and self-management knowledge training for the patients after discharge. In addition, the team followed up the patient through telephone once a week and through network (including patients/family

members' WeChat group, remote consultation, etc.) twice a week, so as to understand the patient's recent situation and make timely adjustments and give health guidance. The team conducted an online missionary conference once a month and held a patient meeting every 3 months. (5) After discharge, the team offered timely training and guidance on nursing procedures and the use of the information platform that community nurses and their families might not be able to independently complete, and family visits were conducted when necessary according to the needs of community nurses or discharged patients.

At home: (1) On discharge, family members/caregivers were told about the patient's continuing care plan. (2) After discharge, the family members/caregivers were required to cooperate with the medical workers in hospital and community health service center to carry out continuing care, give patients support, and request guidance online or offline, or schedule medical appointment through the information platform when necessary.

Evaluation scales

Nutritional status: The mini nutritional assessment (MNA) and subjective global assessment (SGA) were adopted to evaluate the nutritional status of each patient [10, 11]. MNA evaluates the nutritional status of the elderly, with a total score of 30 points, and a higher score indicates better nutritional status. SGA evaluates individual nutritional status, including weight, diet, digestion and absorption, metabolic immunity, etc., with a total score of 14 points, and a higher score indicates better nutritional status.

Psychological state: The self-rating anxiety scale (SAS) was adopted for evaluation of the severity of anxiety [12]. With a total score of 20-80 points, the scale includes 20 items, and each item is graded by a 4-point scale. A higher score indicates more severe anxiety. The self-rating depression scale (SDS) was adopted for evaluating the severity of depression [13]. With a total score of 20-80 points, the scale includes 20 items, each of which is graded by a 4-point scale. A higher score indicates more severe depression. The total score of SAS and SDS *1.25 was the final score of SAS and SDS, respectively.

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QoL: The McMaster inflammatory bowel disease questionnaire (IBDQ) was used for evaluating the QoL [14]. It mainly measures the QoL of patients with IBD, including 32 items in 4 dimensions, with a total score of 224 points. A higher score implies better QoL.

Disease knowledge: The disease knowledge was evaluated using the Crohn's and Colitis knowledge scale (CCKNOW) (Chinese version) [15]. The questionnaire covers 4 dimensions: general knowledge, drug knowledge, diet knowledge, and complication knowledge. It has a total score of 23 points, and a higher score suggests a higher level of knowledge.

Self-efficacy evaluation: The IBD-self-efficacy scale (IBD-SES) was used for evaluating self-efficacy [16]. It mainly covers 36 items in 7 dimensions: medication management, diet management, disease monitoring, emotional management, exercise management, daily life management, and resource utilization, with a total score of 180 points. A higher score indicates more normal self-management behaviors.

Nursing satisfaction: The nursing satisfaction scale for inpatients compiled by Risser, an American scholar [17] and translated and revised by Chen Shuru et al. was used to evaluate the nursing satisfaction of patients toward pain after treatment. The scale includes 21 items in three dimensions: professional technical ability (5 items), educational relationship (5 items), and trust relationship (11 items). All items were scored with Likert 5, from 1 point "strongly disagree" to 5 points "strongly agree". Items 2, 3, 5, 7, 10, 13, 15, and 20 were negative questions, and a higher score indicates higher satisfaction. This scale has been widely used in the evaluation of clinical nursing satisfaction. It has a content validity of 0.98, an internal consistency reliability of 0.80, and a test-retest reliability of 0.93.

Data collection

Baseline data: Before discharge, the IBD patients in the intervention group and control group were surveyed through questionnaires and interviews to collect their baseline data, including the demographic data, clinical data, disease knowledge level, and self-management behaviors.

Data after intervention: Relevant data of each patient 6 months after discharge were collect-

ed through telephone, including disease knowledge level, self-management behaviors, QoL, health service utilization, and nursing satisfaction.

Index detection

Serum preprotein (PA) and albumin (ALB) were determined by immunoturbidimetry using COBAS8000 analyzer (Roche, USA), with kits provided by the manufacturer.

Outcome measures

Primary outcome measures: The changes in psychological state and nutritional status, as well as the levels of PA and ALB were compared between the two groups before and after intervention.

Secondary outcome measures: The clinical data of the two groups were compared. Specific items compared included QoL, disease knowledge levels, and patient self-management abilities before and after intervention. Additionally, nursing satisfaction of patients was assessed after the intervention.

Statistical analyses

In this study, SPSS 20.0 software was used for data processing. The Shapiro-Wilk method was used for normality test. Normally distributed measurement data were described as mean \pm standard deviation (Mean \pm SD), and subjected to paired t test and independent-sample t test for inter-group comparisons and intro-group comparisons, respectively. Measurement data not in normal distribution were described as median (quartile) [M(QL-QU)], and their inter-group comparisons were conducted using the Mann-Whitney U test. The χ^2 test was used to compare the counting data. The indicators were evaluated to predict mortality. $P < 0.05$ indicates a statistically significant difference.

Results

Comparison of baseline data

According to comparison of baseline data between the two groups, no significant difference was found in age, gender, education level, marital status, occupation, caregiver, family residence, course of disease, and disease type ($P > 0.05$, **Table 1**).

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Table 1. Comparison of baseline data

Factors	Control group (n=37)	Intervention group (n=43)	χ^2 value	P value
Age			0.626	0.428
≥30 years old	20	27		
<30 years old	17	16		
Gender			0.506	0.476
Male	30	32		
Female	7	11		
Education level			0.024	0.876
≥ High school	14	17		
< High school	23	26		
Marital status			0.616	0.250
Married	21	22		
Unmarried	16	21		
Occupation			1.056	0.689
On the job	28	28		
Out of job	9	15		
Caregiver			0.159	0.600
Self	18	19		
Spouse	19	24		
Place of residence			0.179	0.671
Urban area	33	37		
Rural area	4	6		
Course of disease			0.840	0.359
≥1 year	26	26		
<1 year	11	17		
Disease type			0.290	0.590
Ulcerative colitis	6	9		
Crohn's disease	31	34		

Comparison of psychological state

The SAS and SDS scores of the two groups were compared. Before intervention, the two groups were comparable in terms of SAS and SDS scores ($P>0.05$, **Figure 1**), whereas after intervention, the scores of SAS and SDS decreased significantly in both groups ($P<0.0001$, **Figure 1**). In addition, after 6 months of intervention, the intervention group demonstrated significantly lower SAS and SDS scores than the control group ($P<0.0001$, **Figure 1**).

Comparison of disease knowledge and QoL scores

The CCKNOW and IBDQ scores were compared between the two groups. Before intervention, no notable difference was found in the CCK-

NOW and IBDQ scores between the two groups ($P>0.05$, **Figure 2**), whereas after intervention, the CCKNOW scores of both groups increased significantly ($P<0.0001$, **Figure 2**), but the IBDQ scores did not change greatly in the control group ($P>0.05$, **Figure 2**). In addition, the intervention group exhibited significantly higher CCKNOW and IBDQ scores than the control group after 6 months of intervention ($P<0.0001$, **Figure 2**).

Comparison of self-management behaviors and nutritional status

According to comparison of IBD-SES, MNA, and SGA scores between the two groups, there was no significant difference in the IBD-SES, MNA, and SGA scores between the two groups before intervention ($P>0.05$, **Figure 3**). After intervention, IBD-SES scores of the control group did not change greatly ($P>0.05$, **Figure 3**), but the MNA and SGA scores of the control group decreased notably ($P<0.0001$, **Figure 3**), while the IBD-SES scores of the intervention group increased significantly after the intervention, and the MNA and SGA scores of the intervention group did not change greatly ($P>0.05$, **Figure 3**). The intervention group showed significantly

higher IBD-SES, MNA, and SGA scores than the control group after 6 months of intervention ($P<0.0001$, **Figure 3**).

Comparison of nutritional indexes

The levels of PA and ALB were compared between the two groups. Before intervention, the levels of PA and ALB were not significantly different between the two groups ($P>0.05$, **Figure 4**), whereas after intervention, the levels decreased greatly in the control group ($P<0.0001$, **Figure 4**), but did not change significantly in the intervention group ($P>0.05$, **Figure 4**). After 6 months of intervention, the intervention group showed notably higher levels of PA and ALB than the control group ($P<0.0001$, **Figure 4**).

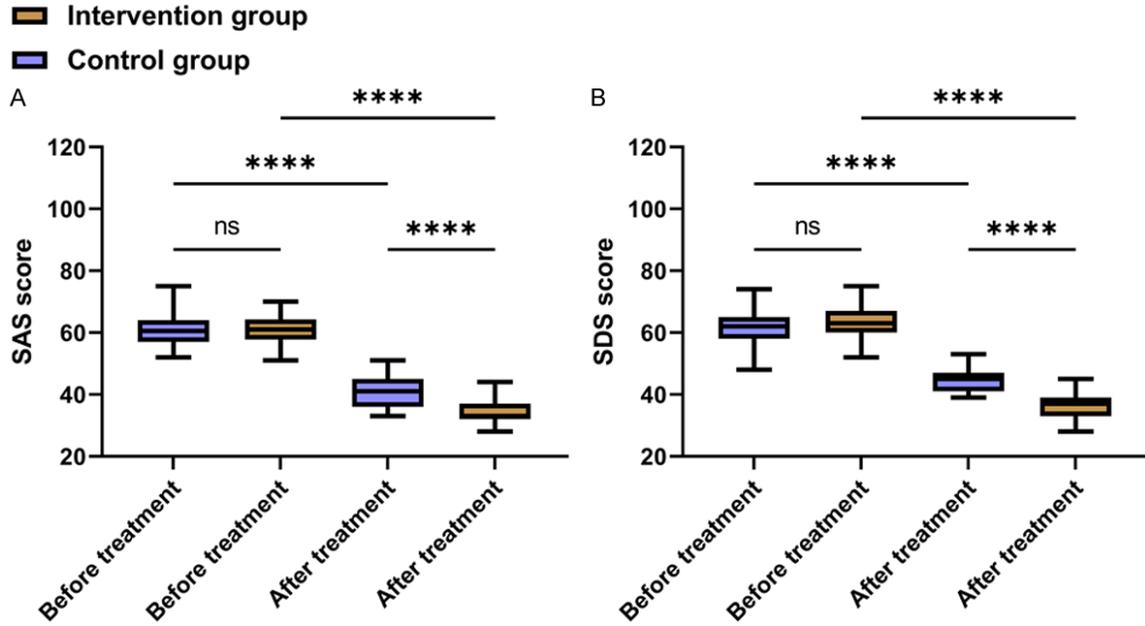


Figure 1. Changes in SAS and SDS scores before and after intervention. A. Changes in SAS scores before and after intervention; B. Changes in SDS scores before and after intervention. Notes: SAS: Self-rating anxiety scale; SDS: Self-rating depression scale; ns means $P > 0.05$; **** means $P < 0.0001$.

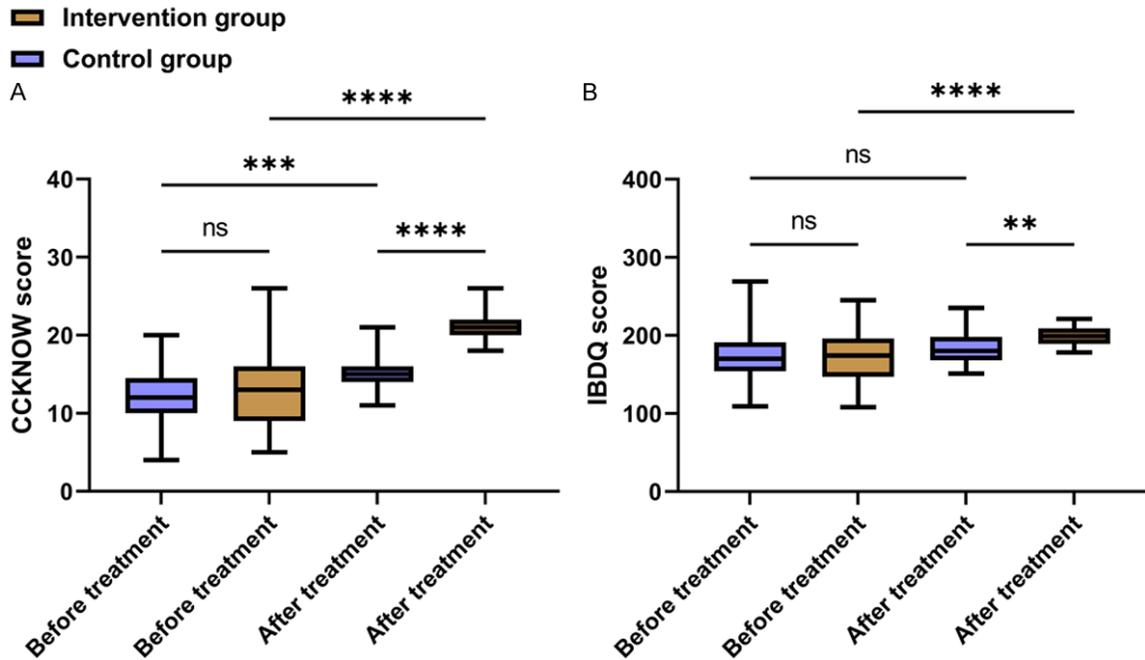


Figure 2. Changes in the disease cognition level and quality of life score before and after intervention. A. Changes in CCKNOW scores before and after intervention; B. Changes in IBDQ scores before and after nursing intervention. Notes: CCKNOW: Crohn's and Colitis knowledge Scale (Chinese version); IBDQ: McMaster inflammatory bowel disease questionnaire; ns means $P > 0.05$; ** means $P < 0.01$; *** means $P < 0.001$; **** means $P < 0.0001$.

Comparison of nursing satisfaction

The nursing satisfaction of the two groups was compared, and no notable difference was found between the two groups in hospital nursing (P > 0.05, Table 2), while 6 months after discharge, the intervention group expressed greatly higher nursing satisfaction than the control group (P < 0.001, Table 2).

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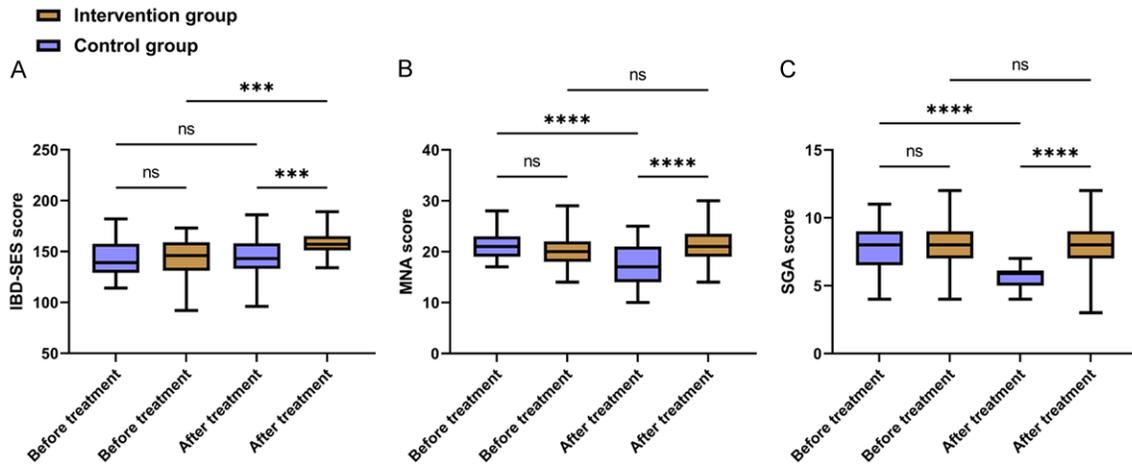


Figure 3. Changes in self-management behaviors and nutritional status score before and after intervention. A. Changes in IBD-SES scores before and after intervention; B. Changes in MNA scores before and after intervention; C. Changes in SGA scores before and after intervention. Notes: MNA: mini nutritional assessment; SGA: Subjective global assessment; IBD-SES: IBD-self-efficacy scale; ns means $P>0.05$; *** means $P<0.001$; **** means $P<0.0001$.

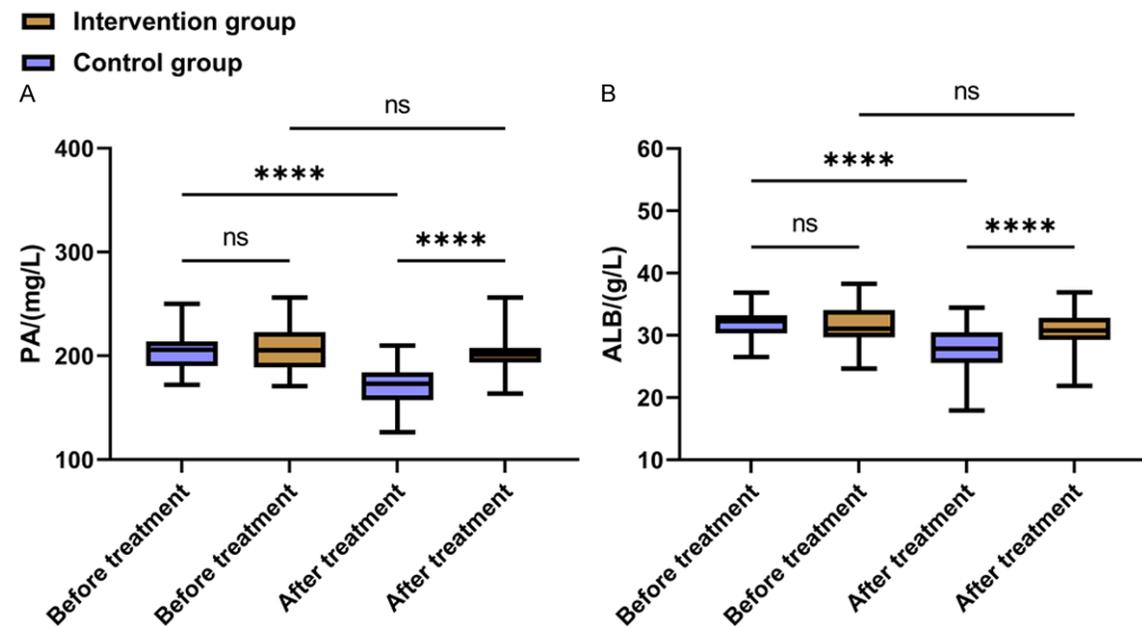


Figure 4. Changes in nutritional indexes before and after intervention. A. Changes in PA before and after nursing intervention; B. Changes in ALB before and after nursing intervention. Notes: PA: Preprotein; ALB: Albumin; ns means $P>0.05$; **** means $P<0.0001$.

Discussion

Currently, there is still a lack of a clinical radical treatment scheme for IBD. Patients with IBD suffer from a certain degree of nutritional deficiency due to repeated digestive tract injuries, which further damages their immune function and seriously compromises their health and

QoL [18]. Traditional nursing intervention methods are one dimensional and limited, and patients are unable to receive comprehensive professional care [19]. Under continuing hospital-family holistic care, it is ensured that patients can get high-quality disease management during hospitalization and after discharge. This mode includes the supervision

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Table 2. Comparison of nursing satisfaction

Factors	Satisfaction toward hospital nursing	Nursing satisfaction 6 months after discharge
Control group (n=37)	4.13±0.58	2.86±0.88
Intervention group (n=43)	4.06±0.59	4.00±0.65
T value	0.494	6.569
P value	0.622	<0.001

from hospital nurses during hospitalization, the management of trained family caregivers after discharge, as well as professional, scientific and comfortable nursing services for patients, which relieves family pressure, offers patients with sufficient emotional support, enhances their confidence, and finally improves the nurse-patient relationship [20].

A comprehensive understanding of IBD forms the cornerstone of patients' health-conscious behaviors. Being well-informed about the disease equips patients to better manage their condition post-discharge, particularly in areas like dietary choices, medication adherence, and prevention of complications. This knowledge is pivotal for IBD patients to effectively manage their condition, ward off relapses, and minimize complications [4]. Moreover, the QoL of IBD patients is shaped by a myriad of factors, ranging from individual traits and psychological well-being to disease severity, work environment, and the extent of social support [21]. The chronic nature of IBD can profoundly disrupt patients' daily routines, imposing both financial strains and psychological stress, thereby diminishing their QoL. Hence, post-discharge QoL monitoring is crucial [22].

Internationally, there's a growing trend of leveraging digital platforms for continuous IBD care. For instance, Denmark and Ireland have pioneered the use of the EU continuing care network platform (www.constant-care.dk) to offer patients with ulcerative colitis uninterrupted services like remote consultations and direct doctor communications via phone, text, or email. This platform also facilitates real-time disease activity assessments and health education, leading to reduced disease relapses, enhanced patient adherence, improved QoL, and decreased healthcare costs [23].

In the current study, the hospital-family holistic care approach yielded significant enhance-

ments in patients' disease comprehension and QoL scores. This improvement can be attributed to a blend of offline health education initiatives, such as distributing health guidance booklets, hosting lecture series, and patient meetings, coupled with the utilization of online plat-

forms. By disseminating disease-centric knowledge, facilitating online video lessons, and fostering real-time interactions for IBD patients, we aimed to kindle their enthusiasm and proactive engagement in continuous care, ultimately elevating their disease knowledge and QoL. Poor nutritional status in most IBD patients is caused by the decrease of oral intake [24]. Intestinal clinical symptoms and intolerance to certain foods reduce the oral intake of patients with IBD, which results in decreased appetite and serious bias in diet and may lead to malnutrition over time [25]. The key to improve the nutritional status of patients with IBD is to enable them to have a scientific and reasonable diet [26]. Compared with the control group, the intervention group did not show decreases in SGA and MNA scores during the study period. The results indicate that the adoption of hospital-family holistic care mode can prevent patients from malnutrition during the course of IBD, which is helpful to maintain a good nutritional status. The objective indicators also showed that the levels of PA and ALB in the intervention group did not decrease within 6 months after the onset of IBD, which indicated that patients in the group maintained a good nutritional status during the disease. However, the levels of PA and ALB in patients who received routine nursing decreased after nursing, which indicated that routine nursing could not effectively ensure a good nutritional status.

We believe there are several possible reasons for the above results. 1) Effective intervention measures: The hospital-family holistic care mode adopted for the intervention group played a key role in maintaining the nutritional status of patients during IBD. This nursing mode provided patients with personalized dietary advice and guidance for their specific needs, ensuring that their nutritional intake is not compromised. 2) Continuous attention and evaluation: During the whole nursing process, the nutrition-

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al status of patients was continuously monitored and evaluated. This continuous attention helped to timely identify and solve any nutrition-related problems, thus avoiding significant changes in nutrition indicators. 3) Cooperation and participation of patients: Because patients and their families were fully educated and trained in the nursing process, they were more actively involved in their own nursing plans and know how to maintain good nutritional status. This active participation and cooperation helped to maintain stable nutritional indicators. In a word, the stability of nutritional indicators in the intervention group before and after nursing may be the result of the joint action of hospital-family holistic care mode, continuous nutritional concern, and patients' active participation.

IBD, with its propensity for recurrence and challenging management, significantly disrupts patients' daily routines, often leading to feelings of depression, anxiety, and inferiority [27]. In our study, we observed a marked reduction in the post-intervention SAS and SDS scores in the intervention group. These results underscore the efficacy of the hospital-family holistic care approach in mitigating negative emotions and bolstering patients' overall mental well-being. The essence of this approach lies in the proactive engagement of nurses. They not only communicated actively with patients to understand their genuine emotions but also observed their daily behaviors and emotional shifts. This dual focus ensures that the nursing care is tailored to the patients' needs while also addressing emotional fluctuations. By guiding patients to be active participants in their care and fostering collaboration with the medical team, this approach enhances patients' engagement in their treatment journey, effectively alleviating feelings of depression and anxiety [28, 29].

Self-management behaviors encompass the proactive steps a patient takes to mitigate the impact of their disease. This involves monitoring the disease, overseeing behaviors, managing emotions, and consistently adhering to treatment protocols [30]. Given the current ambiguity surrounding the etiology and pathogenesis of IBD, and the absence of a definitive treatment, patients often contend with the chronic nature of the disease. This chronicity, characterized by recurrent flare-ups, necessi-

tates prolonged medication, routine outpatient visits, and at times, multiple hospitalizations. Such a regimen not only inflicts physical and emotional distress but also substantially diminishes their QoL [31].

In the present study, the intervention group demonstrated a significant improvement in IBD-SES scores after intervention, underscoring the potential of the hospital-family holistic care model in bolstering patients' self-management capabilities. Presently, the focus of IBD self-management in China is predominantly on medical behavior management. Given the chronic nature of IBD, long-term medication becomes an integral component of self-management. Our approach emphasized enhancing communication between medical professionals and patients, advocating for consistent medication adherence, and ensuring patients and their caregivers are well-informed about the medication's purpose, administration, storage, and potential side effects [32].

Furthermore, by fostering an interdisciplinary nursing team, we facilitated collaboration between IBD specialists, surgeons, and pharmacists, optimizing the patient's medication regimen. The integration of a telemedicine system allowed for real-time monitoring of patients' medication adherence and provided a platform for remote behavioral training. In conjunction with community and familial support, this holistic approach fortified the social support system and enhanced medication oversight. Collectively, these strategies enriched the patients' experience in managing their medication, paving the way for effective disease control.

At the end of the study, patient nursing satisfaction was evaluated and analyzed. According to the results, the control group expressed significantly lower nursing satisfaction than the intervention group after intervention, indicating that hospital-family holistic care can improve the nursing satisfaction of patients. This study has confirmed the positive role of hospital-family holistic care in improving the QoL of IBD patients, alleviating their negative emotions, and elevating their nutritional status. However, the study still has some limitations. There is no long-term follow-up, so whether high-quality care can improve the survival time of patients remains unclear. Secondly, in such a retrospective study, the small sample size may lead to

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bias in the result analysis. Therefore, we hope to carry out long-term follow-up in future research and collect more clinical samples for data analysis, so as to address the limitations of this study.

In summary, the hospital-family holistic care mode can substantially improve the management and nursing of patients with IBD through improving patient self-management ability, maintaining nutritional status, alleviating negative emotions, and elevating QoL.

Acknowledgements

Jiaying City Science and Technology plan project (2023AD11017).

Disclosure of conflict of interest

None.

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