Journal of Clinical and Nursing Research, 2025, Volume 9, Issue 6
http://ojs.bbwpublisher.com/index.php/JCNR
Online ISSN: 2208-3693
Print ISSN: 2208-3685

A Study of the Correlation between Psychological Status and Disease Perception in Adolescent Inflammatory Bowel Disease Patients

Siying Xin[1], Qunfang Miao[2]*, Xiaoning Wang[1], Lulu Yang[1], Xinyu Xu[1]

[1]College of Nursing, Hangzhou Normal University, Hangzhou 311121, Zhejiang, China
[2]School of Clinical Medicine, Hangzhou Normal University, Hangzhou 311121, Zhejiang, China

**Corresponding author: Qunfang Miao, m18668071616@163.com*

Abstract: *Objective*: To investigate and explore the current status and correlation between psychological status and disease perception of adolescent patients with inflammatory bowel disease. *Methods*: Adolescent patients hospitalized in a tertiary hospital in Zhejiang Province and some adolescent patients attending the summer camp of Zhejiang Province Aizaiyanchang Foundation for Inflammatory Bowel Disease were selected as the study subjects, and a questionnaire survey was carried out on 148 adolescent patients with inflammatory bowel disease by using the Generalized Anxiety Disorder Scale (GAD-7), Patient Health Questionnaire (PHQ-9), and the Simplified Version of the Disease Perception Questionnaire (BIPQ). questionnaire survey. *Results*: The depression score of adolescent inflammatory bowel disease patients was (16.40 ± 8.30), the anxiety score was (12.55 ± 5.34), and the total illness perception score was (43.75 ± 10.41). Disease perception of adolescent inflammatory bowel disease patients was at moderate to high level, in which adolescent inflammatory bowel disease patients had the strongest perception of disease control in cognitive dimension as (7.20 ± 0.98) score, followed by strong perception of treatment effect in cognitive dimension as (6.95 ± 2.23) score. According to Pearson correlation analysis it was concluded that their disease perception was positively correlated with anxiety and depression. *Conclusion*: The psychological condition of adolescent patients with inflammatory bowel disease is poor, and there are significant individual differences in the level of disease perception. Healthcare professionals should provide appropriate knowledge support and psychological interventions according to the different needs of adolescent patients. In addition, an online and offline communication platform should be established to better help adolescent patients with inflammatory bowel disease.

Keywords: Adolescents; Inflammatory bowel disease; Psychological profile; Disease perception

Online publication: July 4, 2025

1. Introduction

Inflammatory bowel disease (IBD) is an immune-mediated chronic inflammatory disorder affecting the gastrointestinal

tract, including Crohn's disease (CD), ulcerative colitis (UC), and indeterminate type IBD (IBD-U) [1]. It is a long-term and incurable chronic condition, characterized by atypical symptoms and a complex and challenging diagnostic and differential diagnosis process. Additionally, the lack of specialized IBD clinical and pathological physicians in China often leads to misdiagnosis and mistreatment, causing irreversible damage [2].

The adolescent group is a high incidence of inflammatory bowel disease, the incidence of inflammatory bowel disease in children and adolescents continues to rise globally, according to relevant data, the incidence of inflammatory bowel disease in children aged 0 to 14 years old in China rose from 0.5/1 million in 2001–2010 to 6/100,000 in 2011, an increase of up to 12 times [3]. Inflammatory bowel disease is prolonged and characterized by a certain degree of disability, which puts adolescent patients in a state of exacerbation and consultation, affecting their physical and mental health and quality of life, and bringing suffering to adolescent patients with inflammatory bowel disease.

Due to multiple factors such as the recurrence of the disease and the complexity of the drug treatment program, adolescent patients often experience huge psychological pressure and burden when dealing with this situation. In addition, people with IBD often face health problems related to extra-intestinal stress. Studies have shown that the prevalence of mental illness in IBD patients is as high as 50% [4]. Other studies have confirmed that mental health disorders in childhood and adolescence can lead to long-term mental health problems [5, 6].

The common sense model of disease proposes that when individuals experience a health threat (i.e., illness), they form cognitive and emotional representations of that threat, a process collectively known as disease perception [7]. Disease perception is an individual's belief about their illness at various dimensions and determines their efforts to minimize and/or deal with health threats, which in turn is closely related to clinical and psychological outcomes [8–10]. The model and its ability to predict disease perception have been demonstrated in multiple chronic disease and health behavior studies, including non-adherence to medication, depression, and mortality [11–13]. Relevant foreign studies have confirmed that in adult IBD patients, disease perception is associated with the incidence of mental illness [14–17]coping, and adjustment. Adjustment was measured from the perspectives of psychological distress, quality of life, and functional independence.Illness perceptions (particularly perception of consequences of IBD.

At present, there is a relative lack of research on the correlation between psychological status and disease perception in adolescent IBD patients in China. Therefore, this study intends to investigate the current status of adolescent IBD patients in order to explore the psychological status of adolescent inflammatory bowel disease patients and their ability to perceive disease, and to provide a reference basis for clinical intervention.

2. Methodology

2.1. Object selection

Objective sampling method is used to select young patients with inflammatory bowel disease who are hospitalized in a grade-III hospital in Zhejiang Province and some young patients who participated in the inflammatory Bowel Disease Summer camp of Aizaiyanchang Foundation in Zhejiang Province from July 2021 to July 2024 as the study objects. Diagnostic criteria: The diagnostic criteria for IBD formulated by the Gastroenterology Branch of the Chinese Medical Association in 2018 were met. Inclusion criteria are: (1) age ≤ 18 years old; (2) Primary school or above education level, able to understand and answer the questions in this questionnaire. Meanwhile, the exclusion criteria includes: (1) accompanied by malignant tumors, chronic diseases such as heart, liver,

kidney and lung; (2) suffering from mental illness or cognitive impairment; (3) With other intestinal diseases. The sample size was calculated according to the sample size calculation formula, and the maximum number of items in the questionnaire was 9 [18]. Considering that (10%–15%) is the expected non-recovery rate and inefficiency of the questionnaire, the calculation calculated that at least 99 questionnaires were collected. A total of 148 questionnaires are collected in this study, and 8 invalid questionnaires are excluded (the answers were regular), and 140 valid questionnaires are finally collected. The effective rate is 94.59%. Patients and their families agreed to participate in the study voluntarily. This study is approved by the Ethics Committee of Hangzhou Normal University (2022062) Ethics.

The sample size is calculated according to the sample size calculation formula, and the maximum number of items in the questionnaire was 9 [18]. Considering that (10–15%) is the expected non-recovery rate and inefficiency of the questionnaire, the calculation calculated that at least 99 questionnaires are collected. A total of 148 questionnaires are collected in this study, and 8 invalid questionnaires are excluded (the answers were regular), and 140 valid questionnaires are finally collected. The effective rate is 94.59%. Patients and their families agreed to participate in the study voluntarily.

2.2. Research tools

2.2.1. The general data scale

The general data scale is designed by ourselves, including the demographic characteristics of adolescents (gender, age, place of residence and schooling).

2.2.2. Generalized Anxiety Disorder Scale (GAD-7)

The Generalized Anxiety Scale (GAD-7) is a tool developed by Spitzer *et al.* to screen for generalized anxiety and assess the severity of its symptoms. Foreign research results have shown that the GAD-7 scale has good reliability and validity [19, 20]. The Chinese version of GAD-7 scale was translated and adapted by Chinese scholar He *et al.*, and has been proved to have reliable screening value in primary medical and clinical application in China. The seven items in the scale are based on the seven Diagnostic criteria in the Diagnostic and Statistical Manual of Mental Disorders Fourth edition (DSM-IV) [21]. Survey patients or patients self-reported the time (days) that they are troubled by each item in the past 2 weeks, with a total score of 21 points and GAD-7 score ≥ 10 points, patients are judged to be anxious [22–25]. In this study, the Cronbach's α coefficient of this scale is 0.945.

2.2.3. Patient Health Questionnaire Scale (PHQ-9)

The patient Health Questionnaire Scale (PHQ-9) is compiled by Spitzer *et al.* in 1999 according to the diagnostic criteria of DSM-IV, and then translated and translated into Chinese by Chinese scholar Cui *et al.* [26, 27]. This scale is a self-rating questionnaire for depression containing 9 items, 9 items reflect MDD in DSM-IV standards, and the score range of each item is 0 to 3 points, with a 4-level score [28]. The questionnaire is designed to assess the subjects' emotional state over the past two weeks. The total score of the questionnaire is the cumulative score of 9 items, and the total score ranges from 0 to 27 points. The higher the score, the more serious the depressive symptoms are. The reliability and validity of PHQ-9 in Chinese adolescents have been confirmed [29]. In this study, the Cronbach's α coefficient of this scale is 0.960.

2.2.4. Brief illness perception questionnaire (BIPQ)

The brief illness perception questionnaire (BIPQ), developed by Broadbent *et al.*, has been used to assess an individual's cognitive and emotional responses to their illness [23]. The questionnaire consists of nine items, ranging from disease impact ("how much does inflammatory bowel disease (IBD) affect your life?"), disease duration ("how long do you think IBD will last?"), personal control ("how much control do you feel you have over your illness?"), treatment control ("how much do you think your treatment is helping IBD?"), symptom recognition ("how many symptoms of IBD do you feel?"), illness concern ("how much do you worry about IBD?"), illness comprehensibility ("how much do you know about IBD?"), illness mood ("how much is IBD affecting your mood?", e.g., "does it make you angry , scared, sad, depressed?") surveys are conducted. Three entries, personal control, treatment control, and illness comprehensibility, are reverse scored on a 10 to 0 scale. The sum of the scores of each entry is the total score of the scale, and a higher total score means that the patient may have more serious negative perceptions and feelings about the threat of the disease. The internal consistency coefficient of this questionnaire is 0.66 to 0.92. This questionnaire has been translated into several languages and is widely used in studies of patients with COPD, cancer, and other diseases [31–33]. The Cronbach's alpha coefficient for this scale in this study is 0.616.

2.5. Data collection

This study conducted data collection by combining the questionnaire star platform with paper questionnaires. For the electronic questionnaire, IP restrictions are set to ensure that each IP address could only be filled out once. Prior to the implementation of the survey, the investigators are uniformly trained to explain the survey steps and matters to be noted, and are especially taught how to instruct adolescents to fill out the questionnaire correctly. The purpose of the study and its importance are explained to the patients in detail and standardized guides are used. After the patients gave their consent, they are instructed to fill out the questionnaire. The investigator is present throughout the completion of the questionnaire and is always available to answer the questions of the adolescents, seeking the assistance of their guardians if necessary. All entries had to be filled in completely before submission. The paper version of the questionnaire is collected on-site, and after the electronic version of the questionnaire is recovered, the questionnaires whose responses are regular or whose response time is too short are excluded, and the rest of the qualified questionnaires are double-checked to ensure the accuracy of the data, and the information is finally entered into the system.

2.6. Statistical methods

Statistical analyses are processed by using the SPSS 27.0 software. Normal measurement data are described by applying ($M \pm SD$)deviation. Count data are expressed as frequency and percentage, and comparisons between groups are made by x^2 test. Pearson correlation analysis is used for analysis, with a test level of $\alpha = 0.05$, and $P < .05$ as the difference is statistically significant.

2.7. Ethics

This study is approved by the Ethics Committee of Hangzhou Normal University (2022062) Ethics.

3. Results

3.1. General information of adolescents with inflammatory bowel disease

A total of 140 respondents aged 9 to 18 years, with a mean age of (13.75 ± 2.33) years, of whom 61 (43.6%) were female and 79 (56.4%) were male; 129 (92.1%) lived in urban areas and 11 (7.9%) lived in rural areas; 41 (29.3%) attended elementary schools, 84 (60.0%) attended junior high schools and 15 (10.7%) attended senior high schools.), 84 (60.0%) in middle school, and 15 (10.7%) in high school. There were statistically significant differences in adolescent anxiety symptom scores by age and attendance ($P < 0.05$); adolescent depression symptom scores by age, gender, and attendance ($P < 0.05$); and adolescent illness perception scores by age and attendance ($P < 0.05$), as shown in **Table 1**.

Table 1. General data of adolescents with inflammatory bowel disease

Characteristic	Number of cases	Constituent ratio (%)	Anxiety score	x^2	P	Depression score	x^2	P	Disease perception score	x^2	P
Gender				2.59	0.995		39.58	<0.01		31.85	0.573
Male	79	56.4	12.67 ± 5.51			15.66 ± 8.41			43.67 ± 11.14		
Female	61	43.6	12.39 ± 5.16			17.36 ± 8.12			44.25 ± 9.44		
Age				59.76	<0.01		86.28	<0.01		142.56	<0.01
<12	28	20.0	11.36 ± 4.92			16.39 ± 8.10			40.71 ± 9.87		
12 ≤ 15	74	52.9	12.53 ± 5.31			14.53 ± 7.96			42.26 ± 10.80		
16 ≤ 18	38	27.1	13.47 ± 5.67			20.05 ± 8.06			48.89 ± 8.20		
Residence				10.36	0.498		13.71	0.249		32.19	0.557
City	129	92.1	12.53 ± 5.37			16.24 ± 8.19			44.06 ± 10.44		
Country	11	7.9	12.72 ± 5.24			18.27 ± 9.64			40.09 ± 9.74		
Attendance				75.54	<0.01		85.21	<0.01		121.15	<0.01
Primary School	41	29.3	10.63 ± 4.58			14.71 ± 7.35			41.29 ± 10.26		
Junior High School	84	60.0	13.21 ± 5.35			16.19 ± 8.52			44.14 ± 10.57		
Senior High school	15	10.7	14.07 ± 6.19			22.2 ± 7.36			48.27 ± 8.50		

3.2. Mental health status of adolescent inflammatory bowel disease (IBD) patients

The total anxiety symptom score of 140 adolescent IBD patients was (12.55 ± 5.34), of which 35 (25%) showed severe anxiety. The total score of depressive symptoms was (16.40 ± 8.30), of which 63 (45%) showed severe depression, as shown in **Table 2**.

Table 2. Psychological status score table of adolescent inflammatory bowel patients

	N	Minimum	Maximum	Average	Standard deviation
Anxiety score	140	7.00	26.00	12.5500	5.34335
Depression score	140	9.00	33.00	16.4000	8.29648

3.3. Status of disease perception

Among 140 IBD patients, the total score of disease perception was (43.75 ± 10.41), and the score of cognitive dimension was (29.50 ± 5.82). The score of emotion dimension was (8.25 ± 5.52); The score of disease understanding ability was (6.00 ± 2.29). The top three scores were (7.20 ± 0.98) for disease control in cognitive dimension, (6.95 ± 2.23) for treatment effect in cognitive dimension and (6.75 ± 2.89) for duration of disease in cognitive dimension, as shown in **Table 3**.

Table 3. Scores of BIPQ scales in adolescents with inflammatory bowel disease ($x \pm s$)

Dimension	Entry	Score ($x \pm s$)	Arrange in order
Cognitive	(1) How much inflammatory bowel disease (IBD) affects your life?	3.90 ± 2.13	8
	(2) How long do you think IBD will last?	6.75 ± 2.89	3
	(3) How much control you feel you have over your disease?	7.20 ± 0.98	1
	(4) How much you think your treatment has helped IBD?	6.95 ± 2.23	2
Emotional	(5) How many symptoms of IBD you feel?	4.70 ± 2.44	5
	(6) How worried are you about IBD?	4.05 ± 3.20	7
	(7) How much does IBD affect your mood? (e.g. does it make you angry, scared, sad, depressed?)	4.20 ± 3.12	6
Disease understanding	(8) How much do you know about IBD?	6.00 ± 2.29	4

3.4. Correlation analysis of disease perception with anxiety and depression

The results of Pearson correlation analysis showed that there was a positive correlation between the patients' anxiety and depression status scores and disease perception ($P < 0.05$), as shown in **Table 4**.

Table 4. Correlation analysis between BIPQ score and depression and anxiety

		Total BIPQ score	Anxiety	Depression
Total BIPQ score	*P*	1	0.679**	0.670**
	Significance (two-tailed)		0.000	0.000
Anxiety	*P*	0.679**	1	0.896**
	Significance (two-tailed)	0.000		0.000
Depression	*P*	0.670**	0.896**	1
	Significance (two-tailed)	0.000	0.000	

**. At the 0.01 level (two-tailed), the correlation was significant.

4. Discussion

4.1. Emphasize and improve the mental health of adolescent patients with inflammatory bowel disease

This study found that anxiety and depression were prevalent in our adolescent IBD patients. This is consistent with the results of a previous cohort study, in which the prevalence of depression and anxiety was higher in patients with IBD than in normal subjects [34]. A related longitudinal study showed that anxiety or depressive symptoms in adolescence significantly increased the risk of recurrent anxiety or depression in adulthood by two to three times [35]. Even subclinical symptoms of depression in adolescence may lead to severe depression in adulthood [36]. There are several reasons for the risk of psychiatric disorders in adolescents with inflammatory bowel disease. First, adolescence is a critical period of cognitive and emotional transition, and illness may lead to a decline in quality of life and social functioning [37]. Second, chronic illnesses can negatively affect the mental status of adolescents [38]. Furthermore, patients with inflammatory bowel disease (IBD) often experience uncomfortable symptoms that can cause greater psychological distress in the adolescent population. Additionaly, frequent treatment with corticosteroids may have a direct impact on the patient's emotional state. All of these factors may affect the psychological status of adolescent patients with inflammatory bowel disease. Therefore, healthcare teams should pay great attention to the psychological status of adolescent IBD patients and take active and effective measures to alleviate these negative emotions. For example, measures such as helping adolescent patients through psychological interventions and providing them with family and social support should be taken to promptly identify and intervene in possible psychological problems of adolescent IBD patients in order to promote their full physical and psychological recovery.

4.2. Moderate adjustment of disease perception of adolescent inflammatory bowel disease patients

In this study, it was found that the disease perception of adolescent inflammatory bowel disease patients in China was in the middle-upper level, which was slightly lower compared to the results of the study conducted by Chia *et al.* (48.47 ± 5.80 points) [39]. The highest score for each entry was for disease control in the cognitive dimension, followed by treatment effectiveness in the cognitive dimension. Meanwhile, the results of this study revealed that the total BIPQ score was positively correlated with the level of anxiety and depression in adolescent inflammatory bowel disease patients, i.e., the higher the total score of disease perception, the more likely the presence of anxiety and depressive symptoms, which is consistent with the results of several similar studies abroad [40–42]. It has been shown that disease perception is a key link in determining patients' behavior, which has a great impact on patients' mental health and quality of life [43]. This is consistent with the findings of a recent cross-sectional survey of adult IBD patients, in which negative perceptions of the consequences of the disease were associated with lower levels of physical and mental health, as well as impaired activity and reduced work [17]. This can even have a negative impact on self-management behaviors such as low adherence, potential health risk behaviors, and subsequent loss of personal and societal costs due to delayed work , and the negative impact of the disease on adolescents is particularly pronounced in different populations [17, 44]. Therefore, adjustments in disease perception in adolescent inflammatory bowel disease patients should be emphasized to avoid or reduce physical and mental problems caused by disease perception problems in adolescent inflammatory bowel disease patients.

4.3. Providing multidimensional continuity of care support

Adolescent patients with inflammatory bowel disease (IBD) are at serious risk of chronic mental health disorders, an issue that requires urgent attention and comprehensive care support [42]. However, current mental health care for patients with IBD takes a largely reactive approach rather than preventive measures, with studies confirming the effectiveness of psychological interventions to alter disease perception, and previous reviews suggesting that psychological interventions may be particularly beneficial for adolescents with IBD [45–48]. Evidence on the impact of psychotherapy on patients with IBD suggests that current treatments (particularly cognitive behavioral therapy) may have a positive effect on depression scores in the short term [49]. In other chronic diseases, evidence based on common sense modeling through interventions targeting perceptions of illness has confirmed that these negative effects can be modified through psychological interventions, and if psychological interventions can be provided to adolescents with IBD in a timely manner, it will help to effectively improve their mental health [47]. At the same time, a communication platform combining online and offline can be set up for adolescent IBD patients, so that they can obtain more information related to the disease and exchange their emotional experiences with other adolescent patients, which is necessary to reduce the negative emotions of adolescent inflammatory bowel disease patients and improve their physical and mental health. When necessary, psychological interventions should be provided to these adolescent patients as early as possible to improve their mental health and encourage them to adopt positive health behaviors and lifestyles, so as to enhance the physical and mental health of adolescent IBD patients in an all-round way.

5. Conclusion

In summary, anxiety and depression are common in adolescent inflammatory bowel disease patients. Meanwhile, disease perception will have an impact on the psychological health of adolescent IBD patients. Therefore, the psychological condition and disease perception of adolescent IBD patients should be emphasized and an all-round psychological support platform should be built for them. Comprehensive education should be provided to adolescent inflammatory bowel disease patients from multiple dimensions, including the disease itself, treatment programs, nutritional support, and psychological status, covering their cognitive, emotional, and disease comprehension abilities, and comprehensive measures should be taken for intervention.

There are some limitations in this study, such as the limited sample size of the survey and the limited area in which the study was conducted. In future studies, it is proposed to use joint multicenter research to further expand the sample size and radiate the exploration of other relevant influencing factors in order to provide effective interventions for adolescent IBD patients in a more scientific and comprehensive way.

Funding

2022 Zhejiang Province Love in Extension Inflammatory Bowel Disease Foundation Qingfeng Scientific Research Grant Project (CCCF-QF-2022B78-6)

Disclosure statement

The authors declare no conflict of interest.

References

[1] Collaborative Group for Pediatric Inflammatory Bowel Disease, Chinese Society of Pediatric Gastroenterology, Chinese Medical Association, Chen J, Xu C, et al., 2010, Diagnostic Criteria and Consensus Recommendations for Pediatric Inflammatory Bowel Disease. Chinese Journal of Practical Pediatrics, 25(4): 263–265.

[2] Li H, Li M, 2019, Challenges and Opportunities of Inflammatory Bowel Disease in China. Modern Digestion & Interventional Therapy, 24(6): 569–572+582.

[3] Li J, Miao Q, Chen Y, et al., 2024, Caregiving Experiences and Needs of Family Caregivers for Adolescents With Inflammatory Bowel Disease: A Qualitative Study. Journal of Nursing Science, 39(8): 54–58.

[4] Hoogkamer A, Brooks A, Rowse G, et al., 2021, Predicting the Development of Psychological Morbidity in Inflammatory Bowel Disease: A Systematic Review. Frontline Gastroenterology, 12(2): 137–144.

[5] Kim-Cohen J, Caspi A, Moffitt T, et al., 2003, Prior Juvenile Diagnoses in Adults With Mental Disorder: Developmental Follow-back of a Prospective-Longitudinal Cohort. Archives of General Psychiatry, 60(7): 709–717.

[6] Copeland WE, Shanahan L, Costello EJ, et al., 2009, Childhood and Adolescent Psychiatric Disorders as Predictors of Young Adult Disorders. Archives of General Psychiatry, 66(7): 764–772.

[7] Diefenbach MA, Leventhal H, 1996, The Common-Sense Model of Illness Representation: Theoretical and Practical Considerations. Journal of Social Distress and Homelessness, 5(1): 11–38.

[8] Moss-Morris R, Weinman J, Petrie K, et al., 2002, The Revised Illness Perception Questionnaire (IPQ-R). Psychology & Health, 17(1): 1–16.

[9] Knowles SR, Wilson JL, Connell WR, et al., 2011, Preliminary Examination of the Relations Between Disease Activity, Illness Perceptions, Coping Strategies, and Psychological Morbidity in Crohn's Disease Guided by the Common Sense Model of Illness. Inflammatory Bowel Diseases, 17(12): 2551–2557.

[10] Hagger MS, Orbell S, 2003, A Meta-Analytic Review of the Common-Sense Model of Illness Representations. Psychology & Health, 18(2): 141–184. https://doi.org/10.1080/088704403100081321.

[11] Chen SL, Tsai JC, Chou KR, 2011, Illness Perceptions and Adherence to Therapeutic Regimens Among Patients With Hypertension: A Structural Modeling Approach. International Journal of Nursing Studies, 48(2): 235–245.

[12] Clarke AL, Yates T, Smith AC, et al., 2016, Patient's Perceptions of Chronic Kidney Disease and Their Association With Psychosocial and Clinical Outcomes: A Narrative Review. Clinical Kidney Journal, 9(3): 494–502.

[13] Serlachius A, Gamble G, House M, et al., 2017, Illness Perceptions and Mortality in Patients With Gout: A Prospective Observational Study. Arthritis Care & Research, 69(9): 1444–1448.

[14] Dorrian A, Dempster M, Adair P, 2009, Adjustment to Inflammatory Bowel Disease: The Relative Influence of Illness Perceptions and Coping. Inflammatory Bowel Diseases, 15(1): 47–55.

[15] Kiebles JL, Doerfler B, Keefer L, 2010, Preliminary Evidence Supporting a Framework of Psychological Adjustment to Inflammatory Bowel Disease. Inflammatory Bowel Diseases, 16(10): 1685–1695.

[16] Knowles SR, Cook SI, Tribbick D, 2013, Relationship Between Health Status, Illness Perceptions, Coping Strategies and Psychological Morbidity: A Preliminary Study With IBD Stoma Patients. Journal of Crohn's and Colitis, 7(10): e471–e478.

[17] van Erp SJH, Brakenhoff LKMP, Vollmann M, et al., 2017, Illness Perceptions and Outcomes in Patients With Inflammatory Bowel Disease: Is Coping a Mediator? International Journal of Behavioral Medicine, 24(2): 205–214.

[18] Ni P, Chen JL, Liu N, et al., 2010, Sample Size Estimation in Quantitative Nursing Research: A Methodological Study. Chinese Journal of Nursing, 45(4): 378–380.

[19] Spitzer RL, Kroenke K, Williams JBW, et al., 2006, A Brief Measure for Assessing Generalized Anxiety Disorder: The

GAD-7. Archives of Internal Medicine, 166(10): 1092–1097.

[20] Garcia-Campayo J, Zamorano E, Ruiz MA, et al., 2010, Cultural Adaptation Into Spanish of the Generalized Anxiety Disorder-7 (GAD-7) Scale as a Screening Tool. Health and Quality of Life Outcomes, 8: 1–11.

[21] He XY, Li C, Qian J, et al., 2010, Reliability and Validity of the Generalized Anxiety Disorder Scale in General Hospitals: A Psychometric Study. Shanghai Archives of Psychiatry, 22(4): 200–203.

[22] Ahn JK, Kim Y, Choi KH, 2019, The Psychometric Properties and Clinical Utility of the Korean Version of GAD-7 and GAD-2. Frontiers in Psychiatry, 10: 127.

[23] Broadbent E, Petrie KJ, Main J, et al., 2006, The Brief Illness Perception Questionnaire. Journal of Psychosomatic Research, 60(6): 631–637.

[24] Sapra A, Bhandari P, Sharma S, et al., 2020, Using Generalized Anxiety Disorder-2 (GAD-2) and GAD-7 in a Primary Care Setting. Cureus, 12(5): e8224.

[25] Plummer F, Manea L, Trepel D, et al., 2016, Screening for Anxiety Disorders With the GAD-7 and GAD-2: A Systematic Review and Diagnostic Metaanalysis. General Hospital Psychiatry, 39: 24–31.

[26] Spitzer RL, Kroenke K, Williams JB, et al., 1999, Validation and Utility of a Self-Report Version of PRIME-MD: The PHQ Primary Care Study. JAMA, 282(18): 1737–1744.

[27] Bian C, He XY, Qian J, et al., 2009, Application of the Patient Health Questionnaire-9 for Depressive Symptoms in General Hospitals: A Validation Study. Journal of Tongji University (Medical Science), 30(5): 136–140.

[28] Kroenke K, Spitzer RL, 2002, The PHQ-9: A New Depression Diagnostic and Severity Measure. Psychiatric Annals, 32(9): 509–515.

[29] Hu XC, Zhang YL, Liang W, et al., 2014, Reliability and Validity of the Patient Health Questionnaire-9 (PHQ-9) in Adolescents: A Psychometric Evaluation. Sichuan Mental Health, 27(4): 357–360.

[30] Sun HL, Yang QF, 2022, Association Between Self-Regulation Strategies and Illness Perception in Patients With Diabetic Retinopathy: A Cross-Sectional Study. Clinical Research, 30(10): 18–21.

[31] Wu SY, Xiao Y, Liu MX, et al., 2023, Correlation Analysis of Patient Activation With Illness Perception and Perceived Social Support in Chronic Obstructive Pulmonary Disease. Nursing Practice and Research, 20(3): 330–335.

[32] Xu YX, Yuan R, Wang Y, et al., 2024, Current Status and Influencing Factors of Illness Perception in Patients With Inflammatory Bowel Disease. Psychology Monthly, 19(15): 20–23.

[33] Zhao LL, Zhang XJ, Guo Q, et al., 2023, Analysis of Illness Perception and Its Influencing Factors in Patients With Malignant Bone Tumors. Nursing Practice and Research, 20(24): 3657–3663.

[34] Walker JR, Ediger JP, Graff LA, et al., 2008, The Manitoba IBD Cohort Study: A Population-Based Study of the Prevalence of Lifetime and 12-Month Anxiety and Mood Disorders. American Journal of Gastroenterology, 103(8): 1989–1997.

[35] Pine DS, Cohen P, Gurley D, et al., 1998, The Risk for Early-Adulthood Anxiety and Depressive Disorders in Adolescents With Anxiety and Depressive Disorders. Archives of General Psychiatry, 55(1): 56–64.

[36] Pine DS, Cohen E, Cohen P, et al., 1999, Adolescent Depressive Symptoms as Predictors of Adult Depression: Moodiness or Mood Disorder? American Journal of Psychiatry, 156(1): 133–135.

[37] Rosen MJ, Dhawan A, Saeed SA, 2015, Inflammatory Bowel Disease in Children and Adolescents. JAMA Pediatrics, 169(11): 1053–1060.

[38] Greydanus D, Patel D, Pratt H, 2010, Suicide Risk in Adolescents With Chronic Illness: Implications for Primary Care and Specialty Pediatric Practice: A Review. Developmental Medicine & Child Neurology, 52(12): 1083–1087.

[39] Cha QQ, 2022, Current Status and Influencing Factors of Benefit Finding in Patients With Inflammatory Bowel Disease,

thesis, Soochow University.

[40] Stapersma L, van den Brink G, van der Ende J, et al., 2019, Illness Perceptions and Depression Are Associated With Health-Related Quality of Life in Youth With Inflammatory Bowel Disease. International Journal of Behavioral Medicine, 26(4): 415–426.

[41] Gamwell KL, Baudino MN, Bakula DM, et al., 2018, Perceived Illness Stigma, Thwarted Belongingness, and Depressive Symptoms in Youth With Inflammatory Bowel Disease (IBD). Inflammatory Bowel Diseases, 24(5): 960–965.

[42] Brooks AJ, Norman P, Peach EJ, et al., 2019, Prospective Study of Psychological Morbidity and Illness Perceptions in Young People With Inflammatory Bowel Disease. Journal of Crohn's and Colitis, 13(8): 1003–1011.

[43] Guan CY, Guo DD, Wang M, et al., 2023, Illness Perception and Its Influencing Factors in Patients With Otological Diseases: A Cross-Sectional Study. General Practice Nursing, 21(18): 2563–2567.

[44] Patel V, 2013, Reducing the Burden of Depression in Youth: What Are the Implications of Neuroscience and Genetics on Policies and Programs? Journal of Adolescent Health, 52(2 Suppl 2): S36–S38.

[45] Keefer L, 2017, Editorial: Depression in the Setting of Inflammatory Bowel Disease Means We Have Failed to Provide Early, Effective, Psychosocial Care. Alimentary Pharmacology & Therapeutics, 46(5): 553–554.

[46] Broadbent E, Ellis CJ, Thomas J et al., 2009, Further Development of an Illness Perception Intervention for Myocardial Infarction Patients: A Randomized Controlled Trial. Journal of Psychosomatic Research, 67(1): 17–23.

[47] Weinman J, Petrie KJ, Perry K, et al., 2012, A Text Message Programme Designed to Modify Patients' Illness and Treatment Beliefs Improves Self-Reported Adherence to Asthma Preventer. International Journal of Integrated Care, 12(Suppl 1): e100.

[48] Timmer A, Preiss JC, Motschall E, et al., 2011, Psychological Interventions for Treatment of Inflammatory Bowel Disease. The Cochrane Database of Systematic Reviews, 2011(2): CD006913.

[49] Gracie DJ, Irvine AJ, Sood R, et al., 2017, Effect of Psychological Therapy on Disease Activity, Psychological Comorbidity, and Quality of Life in Inflammatory Bowel Disease: A Systematic Review and Meta-Analysis. The Lancet Gastroenterology & Hepatology, 2(3): 189–199.