ปัจจัยทำนายคุณภาพชีวิตด้านสุขภาพในผู้ป่วยโรคลำไส้อักเสบ
Factors Predicting Health-Related Quality of Life in Patients with Inflammatory Bowel Disease

นิพนธ์ต้นฉบับ

ไห่เซีย จ้าว[1], ภรภัทร เฮงอุดมทรัพย์[2]*, ปณิชา พลพินิจ[3] และ พรชัย จุลเมตต์[4]

[1] นิสิตหลักสูตรพยาบาลศาสตรมหาบัณฑิต (หลักสูตรนานาชาติ)
[2] สาขาวิชาการพยาบาลสุขภาพจิตและจิตเวช
[3] สาขาวิชาการพยาบาลผู้ใหญ่
[4] สาขาวิชาการพยาบาลผู้สูงอายุ
[1-4] คณะพยาบาลศาสตร์ มหาวิทยาลัยบูรพา อ.เมือง จ.ชลบุรี 20131

* Corresponding author: pornpath@buu.ac.th

Original Article

Haixia Zhao[1], Pornpat Hengudomsub[2]*, Panicha Ponpinij[3] and Pornchai Jullamate[4]

[1] Student in Master of Nursing Science (International Program)
[2] Department of Psychiatric and Mental Health Nursing
[3] Department of Adult Nursing
[4] Department of Gerontological Nursing
[1-4] Faculty of Nursing, Burapha University, Muang, Chonburi, 20131, Thailand

* Corresponding author: pornpath@buu.ac.th

บทคัดย่อ

วัตถุประสงค์: เพื่อประเมินระดับคุณภาพชีวิตที่เกี่ยวข้องกับสุขภาพและทดสอบปัจจัยทำนายคุณภาพชีวิตนี้ในผู้ป่วยโรคลำไส้อักเสบในเมืองเหวินโจว ประเทศจีน **วิธีการศึกษา:** การศึกษาเชิงสัมพันธ์สุ่มตัวอย่างอย่างง่ายผู้ป่วยโรคลำไส้อักเสบ 150 ราย จากแผนกระบบทางเดินอาหารของโรงพยาบาลในเครือแห่งแรกของมหาวิทยาลัยการแพทย์เหวินโจว เมืองเหวินโจว ประเทศจีน ใช้แบบสอบถามรวบรวมข้อมูลทั่วไป และแบบประเมิน 1) คุณภาพชีวิตด้านสุขภาพของผู้ป่วยโรคลำไส้อักเสบ 2) การรับรู้ภาวะสุขภาพ 3) ภาพลักษณ์ทางกาย 4) การรับรู้ความเครียด 5) การรับรู้ด้านการสนับสนุนทางสังคมแบบหลายมิติ ทดสอบความสัมพันธ์ด้วยการวิเคราะห์การถดถอยเชิงเส้นพหุคูณ **ผลการศึกษา:** ตัวอย่างมีคุณภาพชีวิตด้านสุขภาพของระดับปานกลาง (ค่าเฉลี่ย 86.43 จาก 100 คะแนน) พบว่าการสนับสนุนทางสังคม การรับรู้ภาพลักษณ์ทางกาย การรับรู้ภาวะสุขภาพ และการรับรู้ความเครียด ร่วมกันอธิบายความแปรปรวนของคุณภาพชีวิตด้านสุขภาพอย่างมีนัยสำคัญคิดเป็นร้อยละ 30 (adjusted R^2 = 0.300, $F_{4,146}$ = 16.939, P-value < 0.001) โดยปัจจัยที่มีอำนาจทำนายสูงสุดคือการรับรู้ภาวะสุขภาพ (β = -0.341) ตามด้วยการรับรู้ความเครียด (β = -0.205) การรับรู้ภาพลักษณ์ร่างกาย (β = -0.218) และการสนับสนุนทางสังคม (β = 0.147) (P-value < 0.05 ทั้งหมด) **สรุป:** คุณภาพชีวิตด้านสุขภาพของคนไข้โรคลำไส้อักเสบชาวจีนมีระดับปานกลาง และสัมพันธ์กับการสนับสนุนทางสังคม การรับรู้ภาพลักษณ์ทางกาย การรับรู้ภาวะสุขภาพ และการรับรู้ความเครียด

คำสำคัญ: คุณภาพชีวิตด้านสุขภาพ; โรคลำไส้อักเสบ; ภาพลักษณ์ทางกาย; การรับรู้ภาวะสุขภาพ; การรับรู้ความเครียด; การรับรู้การสนับสนุนทางสังคม

Abstract

Objective: To determine level of health-related quality of life (HRQOL) and test its predicting factors among patients with inflammatory bowel diseases (IBD) in Wenzhou, China. **Methods**: This correlational study recruited 150 IBD patients from the Department of Gastroenterology in the First Affiliated Hospital of Wenzhou Medical University, Wenzhou, China using simple random sampling method. Demographic characteristics were collected. Questionnaires were used to assess IBD HRQoL, perceived health status, body image, perceived stress, and perceived social support. Associations between HRQoL and its predicting factors were tested using multiple linear regression analysis. **Results:** HRQOL was at a moderate level (mean = 86.43 out of 110 points). Social support, body image dissatisfaction, perceived health status and perceived stress significantly explained 30.0% of the variance in the HRQOL (adjusted R^2 = 0.300, $F_{4,146}$ = 16.939, P-value < 0.001). The strongest influencing factor was perceived health status (β = -.341) followed by perceived stress (β = -0.205), body image dissatisfaction (β = -0.218) and social support (β = 0.147) (P-value < 0.05 for all). **Conclusion:** HRQOL in Chinese IBD patients was at a moderate level and significantly associated with social support, body image dissatisfaction, perceived health status and perceived stress.

Keywords: health-related quality of life; inflammatory bowel disease; body image; perceived health status,; perceived stress; perceived social support

Introduction

Inflammatory bowel disease (IBD) is an umbrella term used to describe the disorders that involve chronic inflammation of digestive tract. Ulcerative colitis and Crohn disease are two subtypes of IBD which are commonly found.[1] Ulcerative colitis involves inflammation and sores (ulcers) along the superficial lining of large intestine (colon) and rectum. Crohn's disease is characterized by inflammation of the lining of digestive tract, which often can involve the deeper layers of the digestive tract. Both IBD's subtypes are usually characterized by the symptoms of diarrhea, rectal bleeding, abdominal pain, fatigue and weight loss. IBD is inflammation or destruction of the bowel wall, which can lead to sores and narrowing of the intestines. Both are chronic conditions that cause abdominal pains, cramping, and urgent bowel movements. Both pathologies alter the quality of life, in many cases in a similar way. The social cost is very important in both cases as well as the economic cost, although much higher in medication cost for IBD.[2] While traditional IBD

occurred in younger ages, the number of adults suffered from IBD is rising rapidly.[3] The disease most often happens among adults 20 to 40 years of age.[4] In some relevant literature, the IBD's median age is 43.3 years.[5]

Although incidence is stabilizing in western countries, burden remains high as prevalence surpasses 0·3%. These data highlight the need for research into prevention of IBD and innovations in health-care systems towards management of this complex and costly disease.[6] Inflammatory bowel disease (IBD) has become common in Asia over the past few decades. Some countries are experiencing a more rapid increase than in Western countries, which has been attributable to rapid urbanization and industrialization.[7] The incidence of IBD emerged with Westernization of dietary habits worldwide. The highest incidence has been reported in East Asia (Korea, Japan, and China) and South Asia (India).[7] Evidence from systematic reviews points to a changing epidemiology of IBD, with stable or decreasing incidence in North America and Europe but increasing incidence in newly industrialized countries.[8] Between 1990 and 2017, the number of patients with IBD in China increased from 654,000 to 1.035 million, incidence rate is 58.36%. The number of cases increased from 1.048 million to 2.66 million.[9] The increased incidence of IBD may be related to improved socioeconomic status, dietary and other lifestyle changes, hygienic conditions, changes in the microbiome and environmental factors in China. The natural course of IBD, low fatality rate and high survival rate will lead to an increase in the prevalence of IBD, which will have an important impact on the health and economy of Chinese people.[9] China have been facing a steady increase in patients with Crohn's disease with the incidence rate from 0.07 to 1.31 per 100,000 persons.[10]

The symptoms of IBD vary depending on the severity of inflammation and where it occurs. Its symptoms may range from mild to severe. Patients are likely to have periods of active illness followed by remission. The increasing incidence of IBD has imposed heavy financial burdens for Chinese patients.[11] Characterized by a relapsing and remitting course, patients with IBD need more close monitoring and therapeutic adjustment for an optimal disease.[12] A considerable proportion of IBD patients in China delayed optimal treatment due to medical difficulties or the high medical costs and transportation accommodation, and this inevitably affects disease prognosis.[13] The quality of life of individual patients is greatly affected. In addition, patients also suffer from physical discomfort such as gastrointestinal symptoms which include abdominal pain, diarrhea, blood, anaerobic vomiting, and anal spasm. The patients are also affected by non-gastrointestinal symptoms such as fever, fatigue, anemia, joint pain, rash, and ulcers. Psychologically, they are also affected by loneliness, alienation, feeling different from others, vulnerability, anxiety, fear of reactions of others, fear of developing cancer, self-blame, guilt, physical frustration, changes in personal image, fear of social interaction, decreased desire, sexual interaction, and concern about pregnancy and childbirth. They also face embarrassment of having to go to the bathroom frequently, the pressure of going out to dinner, and financial problems (i.e., the impact of hospitalization and medical treatment on work and income, the burden of medical expenses), and the need of more help to improve the health-related quality of life (HRQoL).[14] Therefore, early detection of this disease is a great significance for the treatment of this disease, which can effectively prevent complications and therefore improve prognosis as well as patients' HRQoL.[15,16]

Studies have shown that HRQoL is impaired in patients living with IBD as compared with the general population, both physical and mental ones. The patients may experience psychological distress even during clinical remission. Reduced quality of life can impact persons living with IBD as they pursue employment, family planning and personal milestones.[17] Therefore, enhancing HRQoL of patients could help improve the self-care ability of patients, help these patients get timely and effective treatment of the disease, and appropriately reduce the use of medical and health services and reduce the economic pressure of the country.

HRQoL refers to the individual's health status under the influence of illness and injury, medical intervention, aging, and social environment change, as well as the subjective satisfaction related to its economic and cultural background and value orientation. HRQOL is an important measure of the global impact of IBD on a person's physical, mental and emotional well-being.[17]

Currently, there has been no studies examining HRQoL and its predictors in Chinese IBD patients. The literature review identified body image dissatisfaction, perceived health status, perceived stress, and social support as significant predictors of HRQoL since they are supported by both theoretical base and are quite consistent with research

findings. Ferrans and his colleagues revised the Wilson and Cleary model of HRQOL to be more specific, and to facilitate the use of HRQOL in nursing and health care. It consists of five core components including biological function, symptoms, functional status, general health perception, and overall quality of life. There are indications of associations between HRQOL in IBD and disease activity or potentially reversible aspects of a disease, psychological status, coping, stressful life events, and social support. Most patients who come to the hospital are willing to be treated because of the benefits of treatment. Patients of Crohn's disease with active perianal fistulas experience body image dissatisfaction, low self-esteem and poor quality of life. Stress may contribute to the risk of developing IBDs. Perceived stress may trigger symptomatic flare in patients with IBD.

Previous studies have indicated that social support was positively associated with HRQOL in IBD patients with inflammatory bowel diseases (IBD) (β = 1.38, P < 0.01). Greater body image dissatisfaction was also associated with poorer quality of life. Perceived health status refers to the subjective assessment of the adults with IBD towards their health condition. Body image dissatisfaction refers to the perception of these patients by having a negative subjective evaluation of the weight and shape of their own body. Social support refers to how the IBD patients perceived support provided by family, friends, and others.

Currently, there has been no studies examine HRQoL of Chinese IBD patients and its predictors. This present study aimed to determine the level of HRQoL and the associations of HRQoL with selected predictive factors (i.e., body image dissatisfaction, perceived health status, perceived stress, and social support) in IBD patients in Wenzhou, China. Understanding could be useful in developing proper nursing interventions for the patients. It was hypothesized that body image dissatisfaction, perceived health status, perceived stress, and social support could jointly predict HRQoL of Chinese IBD patients.

Methods

In this predictive correlational study, HRQoL and its predicting factors were examined among 150 patients with IBD who came to the Gastroenterology outpatient and inpatient departments of the First Affiliated Hospital of Wenzhou Medical University. The data collection period was from November 2022 to April 2023.

A random sampling was conducted. From the electronic database, the researcher randomly selected 5 – 10 IBD patients scheduled for doctor office visit at the outpatient department or admitted to the inpatient department on the next day. To be eligible, the patients had to be diagnosed with IBD, be admitted in the gastroenterology or visit out-patient department for physical examination and/or regular medications for Crohn's disease or ulcerative colitis. They had to be 18 – 60 years old, be able to speak, understand, and write Chinese, not have severe IBD related symptoms, not have serious side effects from medical treatments, and be willing to participate in this study. Patients who had severely impaired organ function, critical illness, tumor, mental illness, or pregnancy were excluded.

The sample size in this study was calculated by G*Power 3.1 program. Linear multiple regression was chosen as a statistical test with a type I error of 5%, and a power of test of 90%. With a medium effect size of 0.13[19], and the number of independent variables of 4, a sample size of 125 subjects was required. To compensate for a 20% possible missing data, a total of 150 participants were recruited.

Research instruments

A demographic data questionnaire was developed by the researcher. The questionnaire collected the patients' characteristics including types of disease, gender, age, education background, occupation, marital status, personal income, history of smoking, and operation history.

The Chinese version of Inflammatory Bowel Disease Quality of Life (IBDQOL)[20] was used to measure HRQoL of IBD patients. The original Mainland Chinese version of the IBDQ was initially developed and validated in Canada in 1989[20] and more fully validated later.[21] Later, Zhou Yunxian and others revised the Simplified Chinese version[22] to be applied in mainland China. The Chinese version of Inflammatory Bowel Disease Quality of Life was developed by Ruan in 2017[23], which is mainly used to measure HRQoL of Chinese IBD patients. There were 22 items in 4 dimensions of social functioning (5 questions), emotional functioning (6 questions), symptoms and discomfort (5 questions), and intestinal symptom and their effects (6 questions). The response was a 5-point Likert-type scale ranging from 1

(represents a very severe problem) to 5 (represents no problem at all), reflecting the quality of life of the previous two weeks. With the possible total score of 22 – 110 points, higher scores indicate a better HRQOL.

The Short Health Scale (SHS) developed by Henrik et al. in 2006[24] and was translated into Chinese by Xu in 2017.[25] It is used to measure the perceived health status. SHS consists of four problems, including bowel symptoms, activities of daily living life, disease-related worries, and a sense of general well-being. For each of the dour health problems, the patient is asked to rate on a visual scale of 0 to 100 mm where their situation is. Scores from all four health problems are added up to the possible total score of 0 – 400 points where higher the total scores indicating poorer perceived health status.

The Body Image Scale (BIS) developed by Hop-wood et al. in 2001[26] was used to assess the self-image of cancer patients. It was used to measure body image dissatisfaction (BID) in this study. McDermott modified it for IBD patients in 2014 and internal consistency reliability was good (Cronbach's alpha coefficient of 0.93). The scale contains 9 items covering emotion, behavior, and cognition dimensions.[27] The response was a 4-point Likert-type rating scale ranging from 0-not at all, to 1-a little, 2-quite a bit, and 3-very much to evaluate dissatisfaction with appearance changes related to IBD and its treatment. With the possible total scores of 0 – 27 points, higher scores indicate higher level of body image-related distress or body image concerns.[27]

Perceived Stress Scale (PSS) was used to measure perceived stress. The tool was originally developed by Cohen, Kamarck, and Mermelstein (1983).[28] The scale was revised by Yang and Yanzhong et al in 2003.[29] With a total of 14 items, it is used to evaluate the stress perception degree of a variety of people caused by unpredictable, uncontrollable, or overloaded life in the past month. The response is a 5-point Likert-type rating scale ranging from 0-never, to 4-all the time. With the possible total score of 0 – 56 points, the scores of 0 ~ 28, 29 – 42, and 43 – 56 points indicate normal, high, and excessive pressure, respectively.

The Multidimensional Scale of Perceived Social Support was used to measure perceived social support. The scale is a concise and widely used measure of social support developed by Blumenthal and Zimet in 1988[30] and translated to Chinese by Qianjin Jiang.[31] The 12 items assess the individual's perception and evaluation of support from significant others, family members and friends.[30] The response is a 5-point Likert-type rating scale ranging from 0-strongly disagree, to 4-strongly agree. With the possible total score of 0 – 48 points, higher scores indicate higher perceived social support.

Instrument quality assurance

All the instruments used in this study were already validated and regarded as standardized instruments; content validity tests were not conducted. Internal consistency reliability was tested with 30 IBD patients with characteristics comparable to the participants. The Chinese version of Inflammatory Bowel Disease Quality of Life, the Short Health Scale, the Body Image Scale, the Perceived Stress Scale, and the Multidimensional Scale of Perceived Social Support had at least acceptable internal consistency reliability[32] with Cronbach's alpha coefficients of 0.90, 0.75, 0.88, 0.81, and 0.92, respectively.

Ethical considerations

The study was approved by the Institutional Review Board for Protection of Human Subjects in Research (approval number: G-HS047/2565) and the Institutional Review Board of the First Affiliated Hospital of Wenzhou Medical University (approval number: KY2022-160). The participants ensured about the voluntary, anonymity, and confidentiality nature of the study before the written conformed consent was obtained.

Data collection procedure

The data collection was carried out from November 10th in 2022 to April 30th in 2023. The researcher approached the hospital director for permission, and heads of target departments for assistance. Prospective participants were approached and provided with objectives, process, voluntary, anonymity, and confidentiality nature of the study. Once they met the eligibility criteria, the written conformed consent was obtained. The participants were allowed to withdraw from the study at any time with no negative consequences on the care they regularly received. Participants were allowed to complete the questionnaire alone in the private room. The whole process of data collection for each participant took around 30 minutes. The researcher verified the completion of the questionnaires and asked participants if there were any missed answers.

Data analysis

Descriptive statistics including mean with standard deviation and frequency with percentage were used to summarize the participants' characteristics and study psychosocial variables. All psychosocial factors variables were found to normally distributed. Correlations between HRQoL and its predicting factors were tested using Pearson's correlation analysis. Multiple regression was employed to examine the associations between HRQoL and its predicting factors. All assumptions of multiple regression analysis were met. Significance level was set at a type I error of 5%. All statistical analyses were performed using the software program SPSS version 20.

Results

Of the 150 IBD participants, most of them had Crohn's disease (87.3%). They average age of 32.37 years with the majority in their 29 - 39 years old (45.30%), followed by 18 - 28 years old (36.00%). The majority were men (76.70%), single (54%), and with bachelor's degree or higher (63.30%). Slightly more than half of them were business employees (58.70%). Their income was at a medium level (76.70%). Most had no history of smoking (83.30%). The rates of those with and without a history of relevant surgery were similar (50.00% for both).

For HRQoL and its individual sub-domains and HRQoL's predicting factors, their mean scores are shown in Table 1.

Table 1 Mean scores of HRQoL, its sub-domains and predicting factors (N = 150).

Variables	Possible range	Actual range	Mean	SD
Overall HRQoL	22 - 110	42 - 110	86.43	12.89
Sub-domains of HRQoL				
Bowel symptoms	6 - 30	11 - 30	25.47	3.54
Symptoms discomfort	5 - 25	10 - 25	19.42	3.62
Emotional function	6 - 30	10 - 30	21.65	4.36
Social function	5 - 25	5 - 25	19.88	4.77
Perceived stress	0 - 56	4 - 44	25.11	7.16
Perceived social support	12 - 84	12 - 84	53.96	12.24
Body image dissatisfaction	0 - 30	0 - 30	7.84	5.16
Perceived health status	0 - 400	10 - 360	182.54	79.79

As expected, HRQoL was positively correlated with social support (r = 0.234), and negatively correlated with body image dissatisfaction, perceived health status, and perceived stress (r = -0.293, -0.405, and -0.399, respectively) with statistical significance (P-value < 0.01 for all) (Table 2).

Table 2 Pearson's correlation coefficients between HRQoL and its predicting factors (N = 150).

Variables	1	2	3	4	5
1. HRQoL	1				
2. Social support	0.234*	1			
3. Body image dissatisfaction	-0.293*	-0.024	1		
4. Perceived health status	-0.405*	-0.031	0.032	1	
5. Perceived stress	-0.399*	-0.352*	0.274*	0.239*	1

* P-value < 0.01.

All four predicting factors together were significantly associated with HRQoL with 30.0% of the HRQoL variance explained (adjusted R^2 = 0.30, $F_{4,146}$ = 6.939, P-value < 0.001). The strongest predictor was perceived health status (β = -0.341, P-value < 0.001). followed by perceived stress (β = -0.205, P-value 0.010), body image dissatisfaction (β = -0.218, P-value = 0.003). and social support (β = 0.147, P-value = 0.047) (Table 3).

Table 3 Summary of multiple regression analysis of factors influencing health-related quality of life (n = 150).

Predicting factors	B	SE	β	t	P-value
Perceived health status	-0.055	0.011	-0.341	-4.824	< 0.001
Perceived stress	-0.370	0.142	-0.205	-2.601	0.010
Body image dissatisfaction	-0.545	0.179	-0.218	-3.043	0.003
Social support	0.155	0.078	0.147	1.999	0.047

Constant = 101.682, R = 0.564, R² = 0.318, adjusted R² = 0.300, $F_{4,146}$ = 16.939, P-value < 0.001.

Discussions and Conclusion

According to the quality of life of IBD patients in China and abroad, the quality of life of patients is generally low.[33] In this present study, HRQOL of these patients in Wenzhou was at a moderate level (86.43 out of 110 points). As IBDQ-22 is specific to patients in mainland China, so there is no international data to support or compare with. However, the moderate level of HRQoL in this study is consistent with a Dutch study.[34] This moderate HRQOL could be related with non-severe stage of IBD of the patients included. They were rather in remission. In a study in Guangzhou, it was found that the quality of life of patients in the remission stage was higher.[14] A moderate-to-upper level of quality of life could be

rational since QoL for individuals with IBD was poorer than for healthy individuals.[33]

The moderate level of HRQoL in this present study could be due to a high proportion of male patients (76.70%). Since men had higher HRQoL[35], a larger number of men in our study allowed for a moderate, not a low level of HRQoL. In accordance with the fact that IBD starts at an early age. as high as 45.30% of participants in our study were in their 29 – 39 years of age and with a mean age of 32.37 years. Previous studies also found that IBD was more prevalent among men and at a young age. In Korean patients, the patients' mean age was 45.96 +/- 17.58 years, and 61.4% of them were men.[36] Chinese patients had a mean age of 35.0 years and 58.5% of them had Crohn's disease and 61.4% were male.[37]

Better quality of life was found in patients with higher education.[35] In this present study, the proportion of college and undergraduate education accounted for 62.60% of the sample indicating that a large portion of IBD patients had higher education. More understanding among patients with higher education could be because they have a higher cognitive level to understand matters and have more channels and ways of acquiring IBD related knowledge. Among the four sub-domains of HRQoL, there was room for improvement especially symptoms discomfort which had the lowest mean score (19.42 out of 25 points) and social function with a mean score of 19.88 out of 25 points.

In this present study, all four predicting factors (i.e., body image dissatisfaction, perceived health status, perceived stress, and social support) were significantly associated with HRQoL (P-value < 0.001). All four factors explained 30.00% of the variance of HRQoL.

Perceived health status was significantly negatively associated with HRQoL as expected (β = -0.341, P-value < 0.001). In other words, patients with higher perceived health status (i.e., negative circumstances) had lower HRQoL. A previous study showed that the severity of the disease was negatively correlated with HRQOL.[38] More severe the disease was associated with worse quality of life.[39] This may relate to the point that poor perception towards patients' health status could be one of the indicators that reflect the low ability to cope with the disease and may link to the decline of patients' quality of life. This is consistent with the study conducted by Zhang et al (2016).[40] The perceived health status of the population in this present study was below medium level

(mean = 182.54 out of 400 points); whereas the study conducted in a Germa showed that the mean score was at a moderate level.[41]

The results of this study also showed that 76.70% of the patients had a medium or above economic level. Another article also mentioned that the score of body pain dimension was positively correlated with the economic status.[42] This may be related to the ease of seeking medical services and timely pain control in patients with better economic conditions. In this present study, 62.60% of the patients had an education background of junior college and undergraduate education indicating that a high degree of education can also help patients better understand and perceive the health status, and help patients get a better quality of life, as mentioned in Zhou's article.[35]

Perceived stress emerged as a significant influencing factor of health-related quality of life (β = -0.205, P-value < 0.01) which is consistent with previous study that HRQOL was low in patients with higher perceived stress.[43-45] In another study in Chinese patients, a negative correlation of perceived stress with quality of life was found.[46]

Psychosocial adaptation is directly proportional to the quality of life. Social stressors' affected male more than female.[47] A higher level of stress was reported by those who were not married, women and those who experienced an increase in IBD-related symptoms.[48] As in this present study, the majority of participants were men (76.70%), and unmarried (54.00%). Their perceived stress was above the moderate level. Therefore, our participants experienced a moderate level of perceived stress. In another study with 84.1% of the OBD participants experiencing stress, they reported family problems (49.4%) and emotional status (40.9%) as the cause of the stress.[49]

Body image dissatisfaction was also a significant influencing factor of HRQoL (β = -0.218, P-value < 0.05). Greater body image dissatisfaction was also associated with poorer quality of life.[50] The most significant predictor of QoL in patients with IBD was body appreciation.[51] McDermott et al showed that females and those who had undergone surgery experienced significantly more body image dissatisfaction.[27] A study showed that body image dissatisfaction was also significantly associated with low levels IBD-specific quality of life.[52] Negative body image self-evaluation may result in psychosocial dysfunction. Body image dissatisfaction in IBD

patients was associated with significant psychological dysfunction. Psychological interventions aiming to target body dissatisfaction should be implemented in the health care of IBD, independently of patients' operative status as mentioned in Trindade's study.[53]

Social support emerged as a significant influencing factor of health-related quality of life (β = 0.147, P-value < 0.05). Previous studies shows perceived stress and perceived social support were significantly associated with HRQoL.[43,54] In this present study, 58.7% of the participants were employed indicating that employed patients were better able to cope with financial stress and psychological stress better and achieve better quality of life. A study shows that quality of life of patients who are working and studying was higher those unemployed or retired.[55] The reason for this phenomenon may be related to the social support and socioeconomic status of patients, and relatively good economic conditions can help patients get better treatment and take the initiative to seek medical treatment. Boise et al suggest that social support may improve the quality of life of people with chronic disease by helping them adapt to their disease and change the way they cope with it.[56]

Patients with high social support have a strong resistance to disease and can cope with disease activity in a positive way. Patients with low social support have a relatively longer course of disease, and more severe illness. Good social support can make patients feel respected, understand and support others, and be willing to accept the kind help of others which could improve their quality of life.[57]

This study has certain strengths and limitations. With a 100% response rate, the findings could be highly generalized. However, since the study was conducted in only one hospital in Wenzhou, generalization to a larger population could be limited. In addition, with self-report data, the results could be over- or underestimated. The scale to assess perceived health status has been rarely used in mainland China. Therefore, suitable scales for assessing this aspect in Chinses context needed further verification.

The results of this study suggested that perceived stress, perceived health status, body image dissatisfaction, and social support are significant predictors of health-related quality of life. Healthcare providers could help patients to have a correct understanding of the disease, so that patients can correctly perceive the disease, get their own health status at the first time, and choose a timely medical treatment. The patients could be helped reduce stress, so they can concentrate more on work, have a better state of study, and bring more happiness to their families. Family, friends, relatives and leaders could provide positive support to strengthen the patient's confidence in facing the disease, better seek medical treatment and establish a proper lifestyle.

For future nursing research, more in-depth studies towards factors associated with IBD should be conducted and should place more focus on young and working adults with IBD. Studies at more hospitals should be conducted for a broader generalization. Intervention studies to enhance significant predictors of HRQoL among these IBD patients are also recommended.

References

1. Harbord M, Annese V, Vavricka SR, et al. The first european evidence-based consensus on extra-intestinal manifestations in Inflammatory bowel disease. J Crohns Colitis 2016;10(3):239-254. (doi: 10.1093/ecco-jcc/jjv213)

2. Mearin F, Sans M, Balboa A. Relevance and needs of irritable bowel syndrome (IBS): comparison with inflammatory bowel disease (IBD). Gastroenterol Hepatol 2022;45(10):789-798.

3. Kochar B, Orkaby AR, Ananthakrishnan AN, Ritchie CS. Frailty in inflammatory bowel diseases: an emerging concept. Therap Adv Gastroenterol 2021;14:17562848211025474. doi: 10.1177/17562848211025474)

4. Chi KR. Epidemiology: Rising in the east. Nature 2016;540(7634):S100-S102. (doi: 10.1038/540S100a)

5. Meijboom RW, Gardarsdottir H, Becker ML, et al. Switching TNF alpha inhibitors: patterns and determinants. Pharmacol Res Perspect 2021; 9(4):e00843. (doi: 10.1002/prp2.843)

6. Ng SC, Shi HY, Hamidi N, et al. Worldwide incidence and prevalence of inflammatory bowel disease in the 21st century: a systematic review of population-based studies. Lancet 2017;390(10114):2769-2778.

7. Ng WK, Wong SH, Ng SC. Changing epidemiological trends of inflammatory bowel disease in asia. Intest Res 2016;14(2):111-119. (doi: 10.5217/ir.2016.14.2.111)

8. Alatab S, Sepanlou SG, Ikuta K, et al. The global, regional, and national burden of inflammatory bowel disease in 195 countries and territories, 1990–2017: a systematic analysis for the global burden of disease study 2017. Lancet Gastroenterol Hepatol 2020;5(1):17-30.

9. Jin H, Zhang J. Prevalence and trends of inflammatory bowel disease in chinese population from 1990 to 2017. J Hubei Med Coll 2021;40(2): 187-189,196. (doi: 10.13819/j.issn.2096-708X.2021.02.016)

10. Li X, Song P, Li J, et al. The disease burden and clinical characteristics of inflammatory bowel disease in the chinese population: a systematic review and meta-analysis. Int J Environ Res Public Health 2017;14(3): 238. (doi: 10.3390/ijerph14030238)

11. Yu Q, Zhu C, Feng S, et al. Economic burden and health care access for patients with inflammatory bowel diseases in china: web-based survey study. J Med Internet Res 2021;23(1):e20629. (doi: 10.2196/20629)

12. Hudesman DP, Chakravarty SD, Emond B, et al. Healthcare resource utilization and costs associated with inflammatory bowel disease among patients with chronic inflammatory diseases: a retrospective cohort study. BMC Rheumatol 2020;4:16. (doi: 10.1186/s41927-020-0115-2)

13. Peng L, Hu S, Yu Q, Chen Y. Challenging the surge of inflammatory bowel disease: the role of the china crohn's and colitis foundation in the healthcare landscape of inflammatory bowel disease. Inflamm Bowel Dis 2022;28(Suppl 2):S9-S15. (doi: 10.1093/ibd/izab344)

14. Zhou W, You L, Yan YL. Study on quality of life and its influencing factors in patients with inflammatory bowel disease in Guangzhou. Chinese J Nurs 2006;13(4):3. (doi: 10.3969/j.issn.1008-9969.2006.04.007) (in Chinese)

15. Gomollon F, Dignass A, Annese V, et al. 3rd European evidence-based consensus on the diagnosis and management of crohn's disease 2016: part 1: diagnosis and medical management. J Crohns Colitis 2017;11(1):3-25. (doi: 10.1093/ecco-jcc/jjw168)

16. Magro F, Gionchetti P, Eliakim R, et al. Third european evidence-based consensus on diagnosis and management of ulcerative colitis. part 1: definitions, diagnosis, extra-intestinal manifestations, pregnancy, cancer surveillance, surgery, and ileo-anal pouch disorders. J Crohns Colitis 2017;11(6):649-670. (doi: 10.1093/ecco-jcc/jjx008)

17. Jones JL, Nguyen GC, Benchimol EI, et al. The impact of inflammatory bowel disease in canada 2018: quality of life. J Can Assoc Gastroenterol 2019;2(suppl 1):S42-S48. (doi: 10.1093/jcag/gwy048)

18. Zhou Y, Guan H, Gao L, Liu M, Wu L, Zhao F. Research progress of quality of life in patients with inflammatory bowel disease. Nurs Res 2020;34(2):5. (doi: 10.12102/j.issn.1009-6493.2020.02.016) (in Chinese)

19. Polit DF, Beck CT. Nursing research: generating and assessing evidence for nursing practice, 10th ed. Philadelphia. Wolters Kluwer Health, 2017: pp.117-136.

20. Guyatt GH, Feeny DH, Patrick DL. Measuring health-related quality of life. Ann Intern Med 1993;118(8):622-629. (doi: 10.7326/0003-4819-118-8-199304150-00009)

21. Irvine EJ, Feagan B, Rochon J, et al. Quality of life: a valid and reliable measure of therapeutic efficacy in the treatment of inflammatory bowel disease. Gastroenterology 1994;106(2):287-296.

22. Zhou Y. The Clinic Application of Chinese version of inflammatory bowel disease questionnaire. Master's degree thesis. 2006. (Accessed on Sep. 20, 2024, at http://cnki.kmlib.yn.cn/kcms/detail/detail.aspx?filename=2006074717.nh&dbcode=CMFD&dbname=CMFD2006) (in Chinese)

23. Ruan JY, Chen Y, Zhou YX. Development and validation of a questionnaire to assess the quality of life in patients with inflammatory bowel disease in mainland china. Inflamm Bowel Dis 2017;23(3):431-439. (doi: 10.1097/Mib.0000000000001024)

24. Hjortswang H, Jarnerot G, Curman B, et al. The short health scale: a valid measure of subjective health in ulcerative colitis. Scand J Gastroenterol 2006;41(10):1196-1203. (doi: 10.1080/00365520600610618)

25. XU H. Development of the Chinese version of the short health scale for patients with inflammatory bowel disease. Doctoral dissertation. Zhejiang Chinese Medical University. 2017. (Accessed on Sep. 20, 2024, at https://xueshu.baidu.com/usercenter/paper/show?paperid=115t06s0dd6h0j60ed2v0j90sf793389)

26. Hopwood P, Fletcher I, Lee A, Al Ghazal S. A body image scale for use with cancer patients. Eur J Cancer 2001;37(2):189-197. (doi: 10.1016/s0959-8049(00)00353-1)

27. McDermott E, Moloney J, Rafter N, et al. The body image scale: a simple and valid tool for assessing body image dissatisfaction in inflammatory bowel disease. Inflamm Bowel Dis 2014;20(2):286-2 90. (doi: 10.1097/01.MIB.0000438246.68476.c4)

28. Cohen S, Kamarck T, Mermelstein R. A global measure of perceived stress. J Health Soc Behav 983;24(4):385-396.

29. Yang T, Rockett IRH, Yang X, Xu X. Patterns and correlates of stress among rural Chinese males: A four-region study. Public Health 2009;123(10):694-698.

30. Zimet GD, Powell SS, Farley GK, Werkman S, Berkoff KA. Psychometric characteristics of the multidimensional scale of perceived social support. J Pers Assess 1990;55(3-4):610-617. (doi: 10.1080/00223891.1990.9674095)

31. Chen N Y, MAaH-m, Chen Z, Jia Y-l, Wang X, Chen J-j. Reliability and validity of Chinese version of multidimensional scale of perceived social support in elderly people with chronic diseases. J Nurs 2018;25(18):5-8. (doi: 10.16460/j.issn1008-9969.2018.18.005)

32. Taber K. The use of Cronbach's alpha when developing and reporting research instruments in science education. Res Sci Educ 2018;48:1273–1296. (doi: https://doi.org/10.1007/s11165-016-9602-2)

33. Knowles SR, Graff LA, Wilding H, Hewitt C, Keefer L, Mikocka-Walus A. Quality of life in inflammatory bowel disease: a systematic review and meta-analyses-part I. Inflamm Bowel Dis 2018;24(4):742-751. doi: 10.1093/ibd/izx100

34. Paulides E, Pasma A, Erler NS, van Eijk RLA, de Vries AC, van der Woude CJ. Impact of the coronavirus disease pandemic on health-related quality of life of patients with inflammatory bowel disease. Dig Dis Sci 2022;67(7):2849-2856. (doi: 10.1007/s10620-021-07118-8)

35. Zhou J. Quality of life and related factors in patients with inflammatory bowel disease. J Hebei Med Univ 2012;33(4):435-437. (doi: 10.3969/j.issn.1007-3205.2012.04.023) (in Chinese)

36. Kim B, Chae J, Kim EH, et al. Physical activity and quality of life of patients with inflammatory bowel disease. Medicine 2021;100(27):e26290. (doi: 10.1097/MD.0000000000026290)

37. Liu J, Ge X, Ouyang C, et al. Prevalence of malnutrition, its risk factors, and the use of nutrition support in patients with inflammatory bowel disease. Inflamm Bowel Dis 2022;28(suppl 2):S59-S66. (doi: 10.1093/ibd/izab345)

38. Li R, Yang X, Moerzha B, Zhang T. The evaluation of health-related quality of life in patients with inflammatory bowel disease. Chinese J Digest 2012;32(1):5. (doi: 10.3760/cma.j.issn.0254l432.20l2.0l.006) (in Chinese)

39. Zhu Y, Ding X, Lin Z, Bian Q. To investigate the quality of life and its influencing factors in patients with inflammatory bowel disease. J Nurs Admin 2013;13(4):3. (doi: 10.3969/j.issn.1671-315X.2013.04.005)

40. Zhang M, Hong L, Zhang T, et al. Relationship between health status, illness perceptions, coping strategies and psychological status in patients with Crohn's disease. J Intern Med Concepts Pract 2016;11(5):5. (doi: DOI:10.16138/j.1673-6087.2016.05.008) (in Chinese)

41. Demmer S, Kleindienst N, Hjortswang H, et al. Validation of the German version of the short health scale – a brief, valid and reliable instrument to assess health-related quality of life in German-speaking patients with inflammatory bowel diseases. Zeitschrift für Gastroenterologie 2023; 61(9):1207-1213. (doi: 10.1055/a-1976-9971)

42. Zhou Y. Investigation of quality of life and its influencing factors in patients with inflammatory bowel disease. J Zhejiang Chinese Med Univ 2014;38(1):4. (doi: CNKI:SUN:BHON.0.2014-01-030) (in Chinese)

43. Moradkhani A, Beckman LJ, Tabibian JH. Health-related quality of life in inflammatory bowel disease: psychosocial, clinical, socioeconomic, and demographic predictors. J Crohns Colitis 2013;(6):467-473.

44. Iglesias-Rey M, Barreiro-De Acosta M, Caama-O-Isorna F, et al. Psychological factors are associated with changes in the health-related quality of life in inflammatory bowel disease. Inflamm Bowel Dis 2014; 20(1);92-102. (doi: 10.1097/01.MIB.0000436955.78220.bc)

45. Tabibian A, Tabibian JH, Beckman LJ, Raffals LL, Papadakis, KA, Kane SV. Predictors of health-related quality of life and adherence in crohn's disease and ulcerative colitis: implications for clinical management. Dig Dis Sci 2015;60(5):1366-1374. (doi: 10.1007/s10620-014-3471-1)

46. Luo H. The role of stress and coping behavior in inflammatory bowel disease. Peking, China. Peking Union Medical College and Chinese Academy of Medical Sciences, 2015. (doi: 10.7666/d.Y2817948) (in Chinese)

47. Ersan N, Dolekoglu S, Fisekcioglu E, Ilguy M, Oktay I. Perceived sources and levels of stress, general self-efficacy and coping strategies in preclinical dental students. Psychol Health Med 2018;23(5):567-577. (doi: 10.1080/13548506.2017.1384844)

48. Refaie E, Garcia Mateo S, Martinez Dominguez SJ, et al. Impact of the lockdown period due to the COVID-19 pandemic in patients with inflammatory bowel disease. Gastroenterol Hepatol 2022;45(2):114-122. (doi: 10.1016/j.gastrohep.2021.03.012)

49. Vegni E, Gilardi D, Bonovas S, et al. Illness perception in inflammatory bowel disease patients is different between patients with active disease or in remission: a prospective cohort study. J Crohns Colitis 2019;13(4): 417-423. (doi: 10.1093/ecco-jcc/jjy183)

50. Beese SE, Harris IM, Dretzke J, Moore D. Body image dissatisfaction in patients with inflammatory bowel disease: a systematic review. BMJ Open Gastroenterol 2019;6(1):e000255. (doi: 10.1136/bmjgast-2018-000255)

51. Matos R, Lencastre L, Rocha V, et al. Quality of life in patients with inflammatory bowel disease: the role of positive psychological factors. Health Psychol Behav Med 2021;9(1):989-1005. (doi: 10.1080/21642850.2021.2007098)

52. McDermott E, Mullen G, Moloney J, et al. Body image dissatisfaction: clinical features, and psychosocial disability in inflammatory bowel disease. Inflamm Bowel Dis 2015;21(2):353-360. (doi: 10.1097/MIB.0000000000000287)

53. Trindade IA, Ferreira C, Pinto-Gouveia J. The effects of body image impairment on the quality of life of non-operated Portuguese female IBD patients. Qual Life Res 2017;26(2):429-436.

54. Fu H, Kaminga AC, Peng Y, et al. Associations between disease activity, social support and health-related quality of life in patients with inflammatory bowel diseases: the mediating role of psychological symptoms. BMC Gastroenterol 2020;20(1):11. (doi: 10.1186/s12876-020-1166-y)

55. Qi Y, Wang A. Quality of life and its influencing factors in patients with inflammatory bowel disease. J Nurs Train 2020;35(24):4. (doi: 10.16821/j.cnki.hsjx.2020.24.020) (in Chinese)

56. Boise L, Heagerty B, Eskenazi L. Facing chronic illness: the family support model and its benefits. Patient Educ Counsel 1996;27(1):75-84.

57. Pan S, Yang L, Yan W, Wang F. To investigate the quality of life and its psychosocial influencing factors in patients with ulcerative colitis. Med Soc 2012;25(5):80-82.

58. Ferrans CE, Zerwic JJ, Wilbur JE, Larson JL. Conceptual model of health-related quality of life. J Nurs Scholarsh 2005;37(4):336-342.

59. Van der Eijk I, Vlachonikolis IG, Munkholm P, et al. The role of quality of care in health-related quality of life in patients with IBD. Inflamm Bowel Dis 2004;10(4):392-398.

60. Hong L, Zhang C, Fan R, et al. Infliximab for Crohn's disease patients with perianal fistulas: better image, better life. Med Sci Monit 2020;26: e925018-e925011. (doi: 10.12659/MSM.925018)

61. Rozich JJ, Holmer A, Singh S. Effect of lifestyle factors on outcomes in patients with inflammatory bowel diseases. Am J Gastroenterol 2020;115(6):832-840.