International Journal of Current Advanced Research
ISSN: O: 2319-6475, ISSN: P: 2319-6505, Impact Factor: 6.614
Available Online at www.journalijcar.org
Volume 8; Issue 05 (D); May 2019; Page No.18773-18777
DOI: http://dx.doi.org/10.24327/ijcar.2019.18777.3597

Research Article

A CROSS SECTIONAL STUDY ON QUALITY OF LIFE IN INFLAMMATORY BOWEL DISEASE

Gireesh Gopinathan, *Chezhian Annasamy and Venkateswaran Arcot Rajeshwaran,

Institute of Medical Gastroenterology, Madras Medical College, Chennai

A R T I C L E I N F O

Article History:
Received 10th February, 2019
Received in revised form 2nd March, 2019
Accepted 26th April, 2019
Published online 28th May, 2019

Key words:

Anemia, health-related quality of life, inflammatory bowel disease, sleep quality, hypoalbuminemia

A B S T R A C T

Background: Inflammatory bowel disease (IBD) is a chronic relapsing diseases. Inflammatory bowel disease (IBD) patients has an impaired health-related quality of life. This study was conducted to identify the factors which affect the HRQOL in IBD patients.

Materials and Methods: Eighty eight patients were included in the study. This was a prospective cross-sectional study carried out at Madras Medical College, Institute of Medical Gastroenterology. They were given IBD questionnaire (IBDQ-32) & Pittsburgh sleep quality index questionnaire and asked to fill the same. Sociodemographic data were collected from these patients. Disease activity in IBD was assessed by Crohn's disease activity index (CDAI) and ulcerative colitis activity index (UCAI). The correlations of sleep quality, sociodemographic variables, and disease characteristics with IBDQ were investigated.

Results: IBDQ-32 mean score was lower in patients who had more severe disease at initial presentation (P=0.03),recurrent hospitalization (P = 0.002), poor sleep quality (P < 0.001), hypoalbuminemia (P=0.02), anemia (P = 0.03), multiple relapses(P=0.003) and those patients who were on biologicals (P = 0.01) relative to their counterparts. A multivariate regression analysis identified the predictors of decreased HRQOL as hypoalbuminaemia (p=0.015), poor sleep quality (P = 0.013), multiple relapses(P=0.01) and disease severity (P = 0.002).

Conclusion: Impaired HRQOL was significantly associated with poor sleep quality, hypoalbuminemia, multiple relapses and disease severity in IBD patients. Therefore, evaluation of folic acid level and efficacy of its supplementation in prospective studies is recommended.

INTRODUCTION

Inflammatory bowel disease (IBD), which includes ulcerative colitis (UC) and Crohn's disease (CD), is a chronic relapsing disorder of the gut having intestinal & extraintestinal anifestations[1–3]. Molodecky *et al*[4]reported that in Europe,the prevalence of CD & UC are 322 per 100,000 & 505 per 100,000 people respectively Patients with IBD often have periods of remission alternating with periods of disease activity (i.e. relapse)[1,2,5]. Chronic nature of the disease, relapse , extraintestinal manifestations, various medical and surgical treatments and their side effects, stress of developing cancer have significant impacts on daily living and cause reduction in quality of life (QOL).

HRQOL is generally defined as a multidimensional concept that incorporates the physical, emotional, and social features of health perception and health functioning[5–7]. For patients with IBD various symptoms including abdominal discomfort, rectal bleeding, chronic diarrhea, loss of appetite, weight loss, and need for long-term medication use, recurrent hospitalization, surgery act as stressors[5]Thus like other chronic diseases, most patients with IBD have poorer HRQOL when compared to healthy controls[8].

Published studies on the predictors of HRQOL in IBD is limited. A number of clinical and demographic factors have been investigated prior as predictors of HRQOL in IBD; a few of these factors was found to have a significant impact on HRQOL, while others remain unclear. The factors previously found to be consistently associated with HRQOL include male gender,severity of disease, surgical interventions, recurrences per year, and co-existing disease.

The important aspect which affects HRQOL in IBD patients is presence or absence of inflammatory activity although other sociodemographic factors should also be considered. Moreover, some investigators have shown that disease characteristics including endoscopic activity index and disease activity index are associated with HRQOL

METHODS

This was a prospective cross sectional study conducted on

*Corresponding author: **Chezhian Annasamy**
Institute of medical gastroenterology,Madras medical college,Chennai

patients getting followed up in IBD clinic at Rajiv Gandhi Government General Hospital, Madras Medical College, from August 2018 to January 2019. This study was approved by the institutional review board. The study population consisted of patients with inflammatory bowel diseases including ulcerative colitis & crohns disease. Patients consent was taken prior to study. Questionnaires were given to collect data on sociodemographic,sleep quality,QOL & medical treatment. Disease activity indexes were calculated. Samples were collected to assess complete blood count, C-reactive protein (CRP), stool examination, and fecal calprotectin. Inclusion criteria were confirmed diagnosis of IBD based on clinical ,endoscopic & histology[9]. Exclusion criteria were comorbidities including heart failure, cirrhosis, diabetes, malignancy, tuberculosis & chronic pancreatitis. The patients who had prior surgery or confirmed psychological disease were excluded from the study.

Demographic information, including current age, education, occupational status,treatment history and smoking, were gathered from the patients. Medical information including IBD type, date of diagnosis,hospitalization, type of treatment (5-ASA, corticosteroids, or immune modulators), anatomical distribution of disease were collected through reviewing the patients' documents. Height and weight were measured to calculate body mass index.

Pittsburgh sleep quality index (PSQI) questionnaire was used to assess sleep quality. It assesses sleep quality over the last month.It contains 19 items with 7 components, including sleep quality, sleep duration, sleep latency, habitual sleep efficiency, use of sleeping medication sleep disturbances, and daytime dysfunction. Every component has score from 0 to 3. The global score ranged from 0 to 21. Higher scores means poorer sleep quality. The global score more than 5 was identified as bad sleep quality.

IBDQ was used to assess QOL. IBDQ as a disease-specific questionnaire included 32 questions. The questions consisted of 4 domains : Bowel symptoms (10 questions), emotional functioning (12 questions), and social functioning (5 questions) and systemic symptoms (5 questions),. Every question score ranged from 1 to 7 of which 7 corresponded to the highest level of functioning. Total score ranged from 32 to 224. Higher score revealed higher HRQOL.

Severity of disease

UC activity index (UCAI) was used to measure disease severity in UC patients. UCAI was calculated by formula as following: "UCAI = (60 × number of bloody stools per day) + (13 × number of bowel movements per day) + (0.5 × ESR [mm/h]) – (4 × hemoglobin [g/dl]) – (15 × serum albumin [g/dl]) +200." UCAI <150 shows mild disease activity, between 150 and 220 shows moderate, and more than 220 shows severe UC disease.

Crohn's disease activity index (CDAI) was used to measure disease activity in CD patients. This index had 8 questions which were filled out by physician. CDAI ranges from 0 to 600 and the higher score corresponds to more severe disease.[10]

RESULTS

The demographic and disease characteristics of all 47 UC and 41 CD patients are listed in Table 1. 61% of CD group and 75% of UC group were females. Means of age ± SDs were 35.5 ± 10.65 and 40.2 ± 12.13 in CD andUC groups, respectively.None of our sample patients consumed biologic agents or enteral products. Our patients did not have complications such as anal fissure, fistula, or abscess.

Descriptive statistics of inflammatory bowel disease questionnaire-32

The mean score of IBDQ-32 was 155.92 ranging from 32 to 213. Significant difference was not seen between mean of IBDQ-32 score in CD and UC groups (154.45 for CD and 156.81for UC, P = 0.88). Table 2 summarizes the descriptive values for the 4 domains and overall score of IBDQ-32.

Descriptive statistics of Pittsburgh sleep quality index

The mean of PSQI total score was 6.7 ± 4.03. Fifty two percent of patients had poor sleep quality based on PSQI questionnaire scoring.

Determinants of Quality of life

Univariate analysis of all the psychosocial, clinical, demographic, and sleep quality variables revealed significant associations. The mean value of the IBDQ-32 was significantly lower among patients who had hospitalization (143.2vs. 171.6, P = 0.02), patients with anemia (162.3 vs. 145.43, P = 0.23),patients with hypoalbuminemia(134.23 vs. 160.42, P =0.03) and the ones who did not consume folic acid (164.2 vs. 132.2, P = 0.34). Patients who had poor sleep quality (176.12 vs. 133.22, P < 0.01) and more severe disease (165.16 vs. 134.54, P = 0.02) also presented with significantly lower IBDQ-32 scores [Table 3].Statistically significant variables in the univariate analysis were included in a multivariate regression model [Table 4].

DISCUSSION

IBD is a multifactorial disease that is caused by the interaction of environmental, immunogenetics, and lifestyle. The impact of IBD on patients quality of life is influenced by onset of the disease,fluctuating course, and lack of definite cure. Our study showed that individuals who had suffered from more severe disease, patients with hypoalbuminemia & those with poor sleep quality had lower HRQOL scores.

Several studies have shown that disruption of the normal sleep cycle is associated with an increased risk of a number of gastrointestinal diseases such as gastroesophageal reflux disease[11], peptic ulcer disease[12] and irritable bowel syndrome[13]. Altered sleep can not only negatively affect gastrointestinal function, but has the potential to modify the immune system and thus impact disease course in gastrointestinal inflammatory disorders like IBD. Inflammatory processes can in turn affect sleep pattern and thus create a vicious cycle and positive-feedback loop to maintain and perpetuate inflammation

Our study showed that 52% of patients had poor sleep qualityPoor sleep quality can cause increased daytime sleepiness, fatigue, and daytime dysfunction which can decrease HRQOL. This was also reported by Keefer *et al*. that sleep parameters greatly influence QOL[14].

Therefore, long-term sleep restriction can lead to permanent changes in the immune system[15].Sleep disturbances have been associated with exacerbation of symptoms such as pain

and fatigue in multiple chronic inflammatory conditions as well as worsening disease course[16].

Disease severity was associated with lower QOL in our study. It is in consistent with other studies[17,19].In the presence of more severe IBD, the patients may experience more GI symptoms, aggressive treatments, and more complications that might increase anxiety and depression. These negative emotions impair daily functioning. It seems that disease severity is related to higher levels of fatigue and poor sleep quality, and these factors are independently correlated with lower QOL[18].Gray *et al*. suggested that behavioral dysfunction is a mechanism which mediates disease severity to decrease overall perception of HRQOL. Increased internalizing symptoms such as depression and anxiety reduce HRQOL. Externalizing symptoms such as aggression, disruptive, and delinquent behaviors reduce HRQOL in adolescent IBD patients as well.

Sainsbury *et al*. conducted a search for studies which evaluated psychological, social and demographic characteristics of adult IBD patients, yielding 107 relevant studies. Sainsbury *et al*. found a number of psychological and social factors to be related with a lower HRQOL in IBD patients, including female gender, lower socioeconomic status, ethnicity and perceived stress.[20]

In our study hypoalbuminemia is associated with lower QOL which is consistent with other studies. In patients with IBD, hypoalbuminemia was associated with a longer hospital stay, higher risk of pulmonary complication, deep vein thrombosis, longer days on ventilator care & higher incidence of pneumonia & sepsis which is associated with increased fatigue & impairment in daily functioning[21].

In our study, the patients who were hospitalized suffered from lower QOL (P = 0.001). Some previous studies reported the same findings as well[22,23].Disease flare ups in patients will need frequent hospital admissions which lead to increased stress, anxiety, and work absenteeism that drop career fulfillment[24].

There was no significant difference regarding HRQOL between CD and UC groups which was similar to other studies[25].Although other studies report that CD patients have more severe psychosocial dysfunction, anxiety, and depression in comparison to UC patients[26,27].it may be contributed to the severity of CD which can cause long term morbidity in form of intestinal strictures, fistula & abscess which behaves differently in different areas of the world.

Limitations

Cross-sectional design of this study does not guarantee a cause and effect conclusion. Subjective assessment of sleep quality is not as precise as objective measures and possibly does not distinguish the patients in primary stages of sleep disturbance.

CONCLUSIONS

Impaired HRQOL was significantly associated with poor sleep quality, hypoalbuminemia, multiple relapses and disease severity in IBD patients. Therefore, evaluation of folic acid level and efficacy of its supplementation in prospective studies is recommended. Treatment of sleep disturbance with pharmacological agents and nonpharmacological methods should be kept in mind as well.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional ethics committee

Table 1 clinical characteristic of inflammatory bowel disease patients

	CD	UC
Number of patients (*n*)	47	41
Gender, *n* (%)		
Femal	29(61%)	31(75%)
Age, mean±SD (minimum–maximum)	35.5 ± 10.65(22 – 70)	40.2±12.13(21-60)
Employed, *n* (%)	9(19%)	12(29%)
Duration of IBD (years), mean±SD (minimum–maximum)	7.24±6.23 (1–30)	7.15±5.06 (1–18)
Current medical therapy, *n* (%)		
5-ASA	15(31%)	14(34%)
5-ASA + immunomodulator	32(68%)	27(65%)
Folic acid consumption, *n* (%)	42(89%)	40(97%)
Post-IBD-related hospital admission, mean±SD (minimum–maximum)	31(65%)	29(70%)
Education level, *n* (%)		
Illiterate	31(65%)	25(60%)
Elementary	8(17%)	10(24%)
Junior high school	6(12%)	4(9%)
Diploma	2(4%)	2(4%)
CDAI, mean±SD (minimum–maximum)	64.76±40.17 (14–192)	
UCAI, mean±SD (minimum–maximum)		122.25±33.82
PSQI		
PSQI, mean±SD (minimum–maximum)	6.22±4.16 (0-17)	6.12±4.03 (0
BMI, mean±SD (minimum–maximum)	23.49±4.94(16.27–33.23)	21.99±5.75 (16.2–39.96)

Table 2 Descriptive statistics for the 4 domains and overall score of the inflammatory bowel disease questionnaire-32

		IBDQ-32 scores		
	IBD type*	Mean±SD	Minimum (reference valueb)	Maximum (reference valueb)
Bowel-related	UC	50.24±13.70	21(10)	69(70)
symptoms	CD	51.04±17.45	12(10)	68(70)
Systemic	UC	22.45 ± 6.12	8(5)	33(35)
function	CD	23.45±7.04	9(5)	32(35)
Social	UC	26.15±8.6	5(5)	34(35)
function	CD	25.56±9.10	4(5)	34(35)
Emotional	UC	54.57±13.52	25(13)	80(84)
function	CD	56.34±16.22	14(12)	75(84)
Global	UC	154.85±39.2	85(32)	212(223)
function	CD	153.76±48.32	34(32)	213(223)

Table 3 Multiple linear regression analysis between predictor variables and inflammatory bowel disease questionnaire-32 scores

Variable	b	Standardized Error(β)	B	t	P
Hospitalisation	-1.432	1.123	-0.126	-1.245	0.213
Sleep quality	-3.044	1.236	-0.224	-2.45	0.015
Disease severity	-23.29	11.23	-0.223	-2.022	0.045
Anemia	13.43	11.290	0.143	1.345	0.186

Table 4 The relationship between clinical and demographic characteristics of inflammatory bowel disease patients and inflammatory bowel disease questionnaire-32 total score

	IBDQ score	P value
Type of disease		
CD	154.45	0.88
UC	156.81	
Gender		
Female	155.62	0.65
Male	156.31	
Age (Years)		
≤30	154.08	0.8
>30	156.72	
Educational level		
Illiterate	149.67	
Elementary	123.83	
Junior high school	139.10	0.14
Diploma	169.46	
University	162.19	
Working status		
Unemployed	156.4	0.78
Employed	154.3	
Hospitalization		
Yes	143.2	0.02
No	171.6	
Drugs		
5-ASA	165.51	0.3
5-ASA + immunomodulator	163.05	
Anemia		
Non-anemic	162.3	0.23
Anemic	145.43	
Sleep quality		
Good	176.12	0.34
Bad	133.22	
Folic acid		
Yes	164.2	0.34
No	132.2	
Disease severity		
In remission to mild	165.16	0.02
Moderate	134.54	
Hypoalbuminemia		
Yes	134.23	0.03
No	160.42	

References

1. Dudley-Brown S. Prevention of psychological distress in persons with inflammatory bowel disease. Issues Ment Health Nurs 2002;23:403–22.
2. Tabibian JH, Roth BE. Local Thrombolysis: A Newer Approach to Treating Inflammatory Bowel Disease-Related Thromboembolism. J Clin Gastroenterol 2009;43:391–8.
3. Crohn's and Colitis Foundation of America. Retrieved from: http:// www.ccfa.org/ 2009. Cited 13 October 2009.
4. Molodecky NA, Soon IS, Rabi DM, *et al*. Increasing incidence and prevalence of the in ammatory bowel diseases with time, based on systematic review. Gastroenterology. 2012;142:46–54.e42; quiz e30.
5. Van der Eijk I, Stockbrügger R, Russel M. Influence of quality of care on quality of life in inflammatory bowel disease (IBD): literature review and studies planned. Eur J Intern Med 2000;11:228–34.
6. Irvine EJ. Quality of life issues in patients with inflammatory bowel disease. Am J Gastroenterol 1997;92:18S–24S.
7. Drossman DA, Patrick DL, Mitchell CM, Zagami EA, Appelbaum MI. Health-related quality of life in inflammatory bowel disease. Functional status and patient worries and concerns. Dig Dis Sci 1989;34:1379–86.
8. Verma S, Tsai HH, Giaffer MH. Does better disease-related education improve quality of life? A survey of IBD patients. Dig Dis Sci 2001;46:865–9.
9. Seo M, Okada M, Yao T, Ueki M, Arima S, Okumura M. An index of disease activity in patients with ulcerative colitis. Am J Gastroenterol 1992;87:971-6.
10. Mowat C, Cole A, Windsor A, Ahmad T, Arno I, Driscoll R, *et al*. Guidelines for the management of inflammatory bowel disease in adults. Gut 2011;60:571-607.
11. Demeter P, Visy KV, Gyulai N, *et al*. Severity of gastroesophageal reflux disease influences daytime somnolence: a clinical study of 134 patients underwent upper panendoscopy. World J Gastroenterol. 2004;10(12):1798–1801. [PMC free article] [PubMed] [Google Scholar]
12. Segawa K, Nakazawa S, Tsukamoto Y, *et al*. Peptic ulcer is prevalent among shift workers. Dig Dis Sci. 1987;32(5):449–453. [PubMed] [Google Scholar]
13. Nojkov B, Rubenstein J, Chey WD, Hoogerwerf W. The impact of rotating shift work on the prevalence of irritable bowel syndrome in nurses. Am J Gastroenterol. 2010;105(4):842–847.Demonstrated how a circadian sleep disorder can increase the prevalence of gastrointestinal diseases like irritable bowel syndrome. [PMC free article] [PubMed] [Google Scholar]
14. Keefer L, Stepanski EJ, Ranjbaran Z, Benson LM, Keshavarzian A. An initial report of sleep disturbance in inactive in inflammatory bowel disease. J Clin Sleep Med 2006;2:409-16.
15. Gra LA, Vincent N, Walker JR, Clara I, Carr R, Ediger J, *et al*. A population-based study of fatigue and sleep difficulties in inflammatory bowel disease. Inflamm Bowel Dis 2011;17:1882-9.
16. Blondel-Kucharski F, Chircop C, Marquis P, Cortot A, Baron F, Gendre JP, *et al*. Health-related quality of life in crohn's disease: A prospective longitudinal study in 231 patients. Am J Gastroenterol 2001;96:2915-20.
17. Gray WN, Denson LA, Baldassano RN, Hommel KA. Disease activity, behavioral dysfunction, and health-related quality of life in adolescents with in ammatory bowel disease. In amm Bowel Dis 2011;17:1581-6.
18. Graff LA, Walker JR, Lix L, Clara I, Rawsthorne P, Rogala L, *et al*. The relationship of in ammatory bowel disease type and activity to psychological functioning and quality of life. Clin Gastroenterol Hepatol 2006;4:1491-501.
19. Gibson PR, Weston AR, Shann A, Florin TH, Lawrance IC, Macrae FA, *et al*. Relationship between disease severity, quality of life and health-care resource use in a cross-section of Australian patients with crohn's disease. J Gastroenterol Hepatol 2007;22:1306-12.
20. A. Sainsbury, R.V. HeatleyReview article: psychosocial factors in the quality of life of patients with inflammatory bowel disease
21. Prevalence and Outcomes of Hypoalbuminemia in Inflammatory Bowel Disease Patients Undergoing Colectomy Nan Lan, Lei Lian, Bo Shen
22. Kalafateli M, Triantos C, Theocharis G, Giannakopoulou D, Koutroumpakis E, Chronis A, *et*

al. Health-related quality of life in patients with in ammatory bowel disease: A single-center experience. Ann Gastroenterol 2013;26:243-248.

23. Blondel-Kucharski F, Chircop C, Marquis P, Cortot A, Baron F, Gendre JP, *et al*. Health-related quality of life in crohn's disease: A prospective longitudinal study in 231 patients. Am J Gastroenterol 2001;96:2915-20.
24. Magalhães J, Castro FD, Carvalho PB, Moreira MJ, Co er J. Quality of life in patients with in ammatory bowel disease: Importance of clinical, demographic and psychosocial factors. Arq Gastroenterol 2014;51:192-7.
25. Kalafateli M, Triantos C, Theocharis G, Giannakopoulou D, Koutroumpakis E, Chronis A, *et al*. Health-related quality of life in patients with in ammatory bowel disease: A single-center experience. Ann Gastroenterol 2013;26:243-248.
26. Romberg-Camps MJ, Bol Y, Dagnelie PC, Hesselink-van de Kruijs MA, Kester AD, Engels LG, *et al*. Fatigue and health-related quality of life in in ammatory bowel disease: Results from a population-based study in the Netherlands: The IBD-South Limburg cohort. In amm Bowel Dis 2010;16:2137-47.
27. Mnif L, Mzid A, Amouri A, Chtourou L, Tahri N. Health-related quality of life in patients with in ammatory bowel disease: A Tunisian study. Tunis Med 2010;88:933-6.

How to cite this article:

Gireesh Gopinathan *et al* (2019) ' A Cross Sectional Study on Quality of Life in Inflammatory Bowel Disease', *International Journal of Current Advanced Research,* 08(05), pp. 18773-18777. DOI: http://dx.doi.org/10.24327/ijcar.2019.18777.3597

****