Original paper

Correlation of mental and psychological status with disease activity in patients with inflammatory bowel disease using SCL-90 R Questionnaire

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Abstract

Introduction: Inflammatory bowel disease (IBD) can affect mental health. There is no evidence that stress is a direct cause of the disease. Most IBD patients describe an emotional impact, mainly feelings of depression and anxiety. Many questionnaires are used to assess anxiety in those patients, including SCL-90.

Aim: To investigate the correlation between mental and psychological status to disease activity in patients with inflammatory bowel disease using 90-Item Symptom Checklist (SCL-90 R) questionnaire.

Material and methods: The study included 100 patients (50 Crohn's disease (CD) patients – 50 ulcerative colitis (UC) patients). Detailed history taking, systemic physical examination, laboratory investigations, colonoscopy, and the SCL-90-R symptom checklist - a self-report psychometric instrument (questionnaire) for each patient.

Results: The mean age of Crohn's disease patients was 24.2 ±3.6 years. In ulcerative colitis the mean age was 28.5 ±7.3 years. No age or gender relation could be detected with the SCL-90 score in both groups. Our study showed a direct correlation of CD disease activity (CDAI) and endoscopic activity (SES) according to the SCL-90 R questionnaire. There was direct correlation of UC disease activity (SCCAI) and endoscopic activity (UCEIS) according to the SCL-90 R questionnaire.

Conclusions: There is a direct correlation between disease activity and endoscopic activity in UC and CD according to the SCL-90 R questionnaire

Introduction

Crohn's disease (CD) and ulcerative colitis (UC) are the 2 main chronic gastrointestinal tract disorders that fall under the umbrella term of "inflammatory bowel disease" (IBD). These disorders are now more common than they were a few decades ago, with prevalence rates of 120–200/100,000 for UC and CD, respectively, and 50-200/100,000 for UC [1]. IBD treatment aims to control the inflammatory response throughout flare-ups and sustain remission with an emphasis on following the prescribed course of action [2]. IBD has an unidentified aetiology, but genetic, immunological, and environmental variables are all likely to contribute to its development [1, 3, 4]. These elements work in concert to cause immunological dysfunction and gastrointestinal symptoms in people who are genetically prone [5]. Psychological variables, in particular psychological stress, may be one of these environmental triggers.

It is not new to think that psychosocial aspects of IBD are important. In the past, gastroenterologists and psychiatrists originally hypothesised that emotional life events and experiences are probably connected to the escalation of digestive symptoms in the 1930s [6].

Inflammatory bowel disease can affect mental health. There is no evidence that stress is a direct cause of the disease. Most IBD patients describe an emotional impact, mainly feelings of depression and anxiety.

Many questionnaires have been used to assess anxiety in those patients, including the SCL-90.

According to the above, this research is aimed to investigate the correlation between mental and psychological status and disease activity in patients with inflammatory bowel disease using the SCL-90 R questionnaire

Aim

This study has several aims, including the following:
1. Recognise the concept of mental and psychological status to disease activity in patients with IBD.
2. Statement of patients with IBD affecting of mental and psychological status.
3. Providing and enriching the library about mental and psychological status with patients with IBD.
4. Presenting recommendations and proposals useful in improving mental and psychological status in patients with IBD.

Material and methods

The study population and its sample

Determining and selecting the study population is one of the main elements in the research, and the definition of the study population is no less critical than formulating questions and objectives. The study population means the researcher's knowledge of the geographical and temporal boundaries of the study sample and its constituent units. The study population of the study will include 100 patients (50 CD patients – 50 UC patients). This study followed the descriptive-analytical approach. This approach includes the following:
1. The theoretical side, represented by research and scientific thesis written in the study's aspects, used to define the study's concepts and problem and formulate its hypotheses.
2. The practical aspect represented in the questionnaire represented by the scale of social adaptation prepared by the researcher. This is a multi-centric retrospective study. All patients were subjected to the following:
- Detailed history taking with emphasis on symptoms of gastrointestinal diseases such as epigastric pain, dyspepsia, diarrhoea, bleeding per rectum, etc.,
- Thorough systemic physical examination including abdominal examination with stress on signs of gastrointestinal disease such as tenderness, palpable organs or masses,
- Laboratory investigations including complete blood picture (CBC), erythrocyte sedimentation rate (ESR), quantitative C reactive protein (CRP), serum albumin, stool analysis, faecal calprotectin,
- Colonoscopy, SES, and CDAI scores calculated for CD, SCCAI, and UCEIS scores were calculated for UC,

- SCL-90-R symptom checklist: a self-report psychometric instrument (questionnaire).

90-Item Symptom Checklist (SCL90)

A 90-item questionnaire called the Symptom Checklist-90 (SCL90) was used to evaluate psychological issues. The updated version of the questionnaire is known as the Symptom Checklist-90-Revised (SCL90R) [7]. The main difference between the revised version and the original is that the SCL90R is not accessible to the public. The new version has only 2 questions with slightly modified wording. The online SCL90R scoring exam aids in the evaluation of a variety of psychological issues and signs of psychopathology. The tool is also helpful for assessing patient development or therapeutic results. Clinical psychologists, therapists, and other professionals apply the SCL90R instrument in mental health, medical, educational, and research settings [8].

It is effective for the following [9]:
1. Initial assessment of individuals at intake as an objective way to measure symptoms.
2. Monitoring changes by tracking patient progress both during and after therapy.
3. Measurement of treatment program and provider outcomes using collective patient data.

Main characteristics [7]:
1. Only 90 items make up the SCL90R test, which may be finished in 12–15 min.
2. The test was made to give the patient an overview of their symptoms and the severity of those symptoms at a certain time while also measuring 9 major symptom characteristics.
3. The assessment aids in treatment decisions and identifies individuals before issues become acute by providing an index of symptom severity.
4. The test was summarised using the Global Severity Index.
5. More than 1000 studies were carried out to show the instrument's reliability, validity, and usefulness.
6. Clinical trials track the evolution of symptoms like anxiety and sadness.

Statistical analysis

Data were fed into a computer and analysed using IBM SPSS software package version 20.0 (Armonk, NY: IBM Corp). The Kolmogorov-Smirnov and Shapiro-Wilk tests were used to verify the normality of distribution. Quantitative data were described using range (minimum and maximum), mean, standard deviation, and median. The significance of the obtained results was judged at the 5% level.

The used tests were Student's *t*-test for normally distributed quantitative variables, to compare between

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2 studied groups, the F-test (ANOVA) for normally distributed quantitative variables, to compare between more than 2 groups, and Pearson's coefficient to correlate between 2 normally distributed quantitative variables.

Scale adjustment

Testing and hypothesis testing on a graph scale versus answering to answering to answered questions: score (0) expresses the answer of strongly disagree, score (1) expresses the answer of a little bit, score (2) expresses the answer of moderately, degree (3) expresses the answer of quite a bit degree (4) expresses the answer extremely. Interpretation of arithmetic averages, estimates, to obtain the study sample and each of the questionnaire's paragraphs and on each of its fields. It appears the limits adopted by this study when commenting on the arithmetic mean of the variables contained in the study model, and to determine the degree of approval, the researcher identified three levels (high, medium, low) based on the following equation: The length of the period = (the upper limit of the alternative – the lower limit of the alternative)/ the number of levels (4-0)/ = 4/2 = 2, so the levels are as follows:

– Low approval score from 0 to less than 2.00.
– Average approval score from –2.00 to less than 2.33.
– A high degree of approval from 2.33 to 4.00.

Reliability

To ensure the stability, Cronbach's α was used as a study tool to test the stability of the final sample, with a value of 0.764, whereas the stability coefficient "Cronbach's alpha" of e-government was 0.781. In terms of the stability coefficient "Cronbach's alpha" of the economic growth, it was 0.748. This is an excellent rate.

Ethical considerations

All procedures performed in the study involving human participants were in accordance with the ethical standards of the institutional research committee (Medical Research Ethics Committee of Alexandria Faculty of Medicine, Egypt) and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Statement of informed consent: Informed written consent was obtained from each patient in the study. In the case of underage patients, written consent was obtained from the guardians. The authors declare that this article does not contain personal information that allows the identification of the patients.

Results

Description of study population

CD patients

Our study involved 50 patients diagnosed with Crohn's disease with a mean age of 24.2 ±3.6 years. The study population included 27 males and 23 females. No age or gender relationship could be detected with the SCL-90 score, as shown in Tables I, II and Figure 1.

UC patients

Our study involved 50 patients diagnosed with ulcerative colitis with mean age of 28.5 ±7.3 years. The study population included 25 males and 25 females. No age or gender relationship could be detected with the SCL-90 score, as shown in Tables III, IV and Figure 2.

Descriptive analysis of the cohort

Most CD patients included in the study had moderate disease activity (37 patients), 5 had mild disease activity, and 8 had severe activity, according to the CDAI. Endoscopic exploration showed that only 5 patients were in endoscopic remission compared to 15 patients for each of mild, moderate, and severe endoscopic scores, respectively (Table V).

As for UC patients, 20 patients had mild disease activity, 13 patients had moderate disease activity, and 17 patients had severe disease activity according to SSCAI.

Table I. Correlation between SCL-90 score with different parameters in CD patients (*n* = 50)

Variable	SCL-90 score	
	r	*p*
CDAI	0.690	< 0.001*
SES	0.824	< 0.001*
Age	0.218	0.128

*r – Pearson coefficient. *Statistically significant at $p \leq 0.05$.*

Table II. Relationship between SCL-90 score and sex in CD patients (*n* = 50)

Sex	N	SCL-90 score			t	p
		Min.–max.	Mean ± SD	Median		
Male	27	7.0–356.0	163.3 ±83.25	163.0	1.920	0.061
Female	23	50.0–323.0	207.6 ±78.80	232.0		

t – Student's t-test, p – p value for association between different categories.
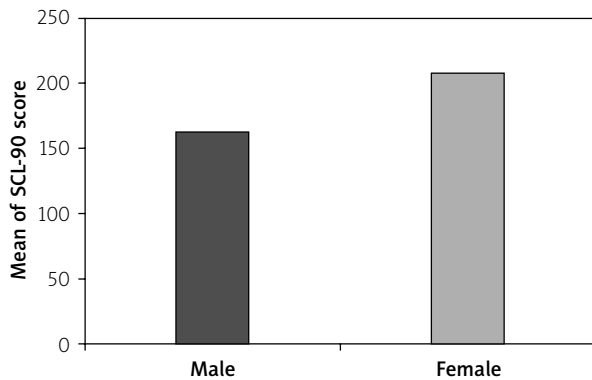
Figure 1. Relationship between SCL-90 score and sex in CD patients (*n* = 50)
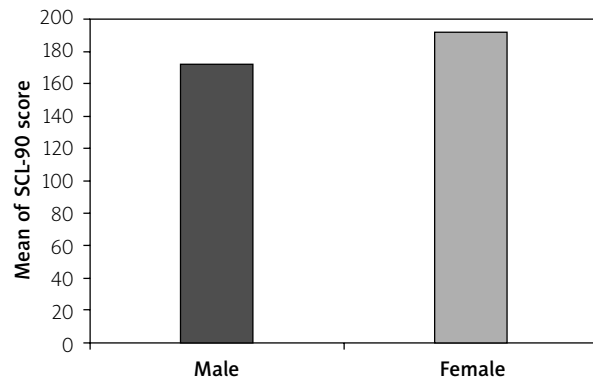

Figure 2. Relationship between SCL-90 score and sex in UC patients (*n* = 50)

Again, only 5 patients had endoscopic evidence of remission compared to 15 patients showing mild, 14 patients showing moderate, and 16 patients showing severe endoscopic activity, according to UCEIS (Table VI).

Correlation between SCL-90 Questionnaire and Disease Activity

Our study showed a direct correlation between CD disease activity (CDAI) and endoscopic activity (SES) and the SCL-90 R questionnaire (Table VII).

Our study showed a direct correlation between UC disease activity (SCCAI) and endoscopic activity (UCEIS) and the SCL-90 R questionnaire (Table VIII).

SCL-90 R Questionnaire level of importance: how much has that problem bothered or distressed you during the past week, including today?

To answer the above question, the arithmetical means and standard deviations were calculated for the estimates that best described about their level of as-

sessment of the problems that bothered or distressed the study subjects as follows (Table IX).

For the detailed description of each of the above that all arithmetic means for the paragraphs of this dimension were greater than the test standard of (2) out of (4) degrees. This means that the employees' estimates of their assessment level of this dimension's paragraphs were high; therefore, the level of evaluating the paragraphs in using SCL-90 R dimensions was high from the patient's point of view. This indicates that all these problems have bothered or distressed patients with inflammatory bowel disease to a high level, which means that there is a strong correlation of mental and psychological status to disease activity in patients with inflammatory bowel disease using the SCL-90 R questionnaire.

Discussion

Numerous review articles have recently focused on the connection between stress and IBD [6, 10–13], concluding that ambiguities and controversies in published reports were partially caused by varying definitions of stress (e.g. stressful life events or hassles, daily stress) and partially by the inclusion of mixed patient groups (CD versus UC) and/or mixed disease statuses (active versus inactive) [6, 11]. The distinction between CD and UC patients as well as the use of the concept of perceived stress, which places an emphasis on an individual's subjective sense of stress and his or her emotional response to it, were therefore the main themes in recent studies [14].

Table III. Correlation between SCL-90 score and different parameters in UC patients (*n* = 50)

Variable	SCL-90 score	
	r	*p*
SCCAI	0.856	< 0.001*
UCEIS	0.820	< 0.001*
Age	0.210	0.144

*r – Pearson's coefficient, *statistically significant at p ≤ 0.05.*

Table IV. Relationship between SCL-90 score and sex in UC patients (*n* = 50)

Sex	N	SCL-90 score			t	p
		Min.–max.	Mean ± SD	Median		
Male	25	10.0–349.0	173.6 ±82.23	168.0	0.811	0.421
Female	25	53.0–323.0	192.6 ±83.11	182.0		

t – Student's t-test, p – p value for association between different categories.

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Table V. Distribution of the studied cases according to CDAI, SES, and total SCL in the CD group (*n* = 50)

Variable	*N*	%
CDAI:		
Mild (< 150)	5	10.0
Moderate (150–< 450)	37	74.0
Severe (450–600)	8	16.0
Min.–max.	100.0–510.0	
Mean ± SD	334.2 ±106.7	
Median (IQR)	327.5 (270.0–420.0)	
SES:		
Remission (1–2)	5	10.0
Mild (3–6)	15	30.0
Moderate (7–16)	15	30.0
Severe (> 16)	15	30.0
Min.–max.	1.0–27.0	
Mean ± SD	11.22 ±7.44	
Median (IQR)	10.50 (4.0–17.0)	
Total SCL:		
Min.–max.	7.0–356.0	
Mean ± SD	183.66 ±83.44	
Median (IQR)	170.50 (114.0–256.0)	

Table VI. Distribution of the studied cases according to SCCAI, UCEIS, and Total SCL in the UC group (*n* = 50)

Variable	*N*	%
SCCAI:		
Mild (< 5)	20	40.0
Moderate (6–10)	13	26.0
Severe (> 10)	17	34.0
Min.–max.	1.0–15.0	
Mean ± SD	8.04 ±4.42	
Median (IQR)	8.0 (4.0–12.0)	
UCEIS:		
Remission (0–1)	5	10.0
Mild (2–4)	15	30.0
Moderate (5–6)	14	28.0
Severe (7–8)	16	32.0
Min.–max.	0.0–8.0	
Mean ± SD	4.92 ±2.40	
Median (IQR)	5.0 (3.0–7.0)	
Total SCL:		
Min.–max.	10.0–349.0	
Mean ± SD	183.12 ±82.38	
Median (IQR)	172.0 (116.0–254.0)	

Table VII. Correlation between Total SCL, CDAI, and SES in the CD group

Variable	*N*	*r*	*p*
Total SCL vs. CDAI:			
Total sample	50	0.690	< 0.001*
Mild (< 150)	5	0.267	0.664
Moderate (150–< 450)	37	0.516	0.001*
Severe (450–600)	8	-0.679	0.064
Total SCL vs. SES:			
Total sample	50	0.824	< 0.001*
Remission (1–2)	5	0.016	0.979
Mild (3– 6)	15	0.022	0.939
Moderate (7–16)	15	0.267	0.336
Severe (> 16)	15	-0.126	0.655

*r – Person's coefficient, *statistically significant at p ≤ 0.05.*

Table VIII. Correlation between Total SCL, SCCAI, and UCEIS in the UC group

Variable	*N*	*r*	*p*
Total SCL vs. SCCAI:			
Total sample	50	0.856	< 0.001[*]
Mild (< 5)	20	0.516	0.020[*]
Moderate (6–10)	13	0.095	0.758
Severe (> 10)	17	0.279	0.279
Total SCL vs. UCEIS:			
Total sample	50	0.820	< 0.001[*]
Remission (0–1)	5	0.747	0.147
Mild (2–4)	15	−0.055	0.846
Moderate (5–6)	14	−0.527	0.053
Severe (7–8)	16	−0.160	0.555

*r – Person coefficient, *statistically significant at p ≤ 0.05.*

These developments have helped clear up disputes and shed light on the role that psychological stress plays in inflammatory bowel disease. There is little question that stress is a triggering and exacerbating factor in relation to the course and symptoms of IBD, even though its function in the start of the condition has not been demonstrated [11, 13, 15, 16]. It certainly qualifies as one of the factors that influence illness relapse [15, 17, 18].

There are some contradictory reports regarding the relationship between stress and the onset of disease, such that of Li *et al.* [19], who discovered a bad correlation between psychological stress and the development of IBD based on a follow-up study on the onset

Table IX. Analysis result dimension ($n = 100$)

No.	Item	Mean	SD	Level of importance
1.	Headaches	3.043	0.684	High
2.	Nervousness or shakiness inside	3.987	0.689	High
3.	Unwanted thoughts, words, or ideas that won't leave your mind	2.638	0.698	High
4.	Faintness or dizziness	3.779	0.873	High
5.	Loss of sexual interest or pleasure	3.745	0.786	High
6.	Feeling critical of others	3.854	0.838	High
7.	The idea that someone else can control your thoughts	3.770	0.831	High
8.	Feeling others are to blame for most of your troubles	3.613	0.919	High
9.	Trouble remembering things	3.787	0.841	High
10.	Worried about sloppiness or carelessness	3.736	0.761	High
11.	Feeling easily annoyed or irritated	2.660	0.287	High
12.	Pains in heart or chest	3.715	0.768	High
13.	Feeling afraid in open spaces or on the streets	3.878	0.568	High
14.	Feeling low in energy or slowed down	3.704	0.703	High
15.	Thoughts of ending your life	3.713	0.709	High
16.	Hearing voices that other people do not hear	3.665	0.723	High
17.	Trembling	3.009	0.549	High
18.	Feeling that most people cannot be trusted	3.860	0.717	High
19.	Poor appetite	3.247	0.685	High
20.	Crying easily	3.915	0.774	High
21.	Feeling shy or uneasy with the opposite sex	3.991	0.716	High
22.	Feeling of being trapped or caught	3.119	0.675	High
23.	Suddenly scared for no reason	3.694	0.924	High
24.	Temper outbursts that you could not control	3.728	0.813	High
25.	Feeling afraid to go out of your house alone	3.651	0.851	High
26.	Blaming yourself for things	3.854	0.838	High
27.	Pains in lower back	3.702	0.840	High
28.	Feeling blocked in getting things done	3.736	0.761	High
29.	Feeling lonely	3.587	0.850	High
30.	Feeling blue	3.068	0.539	High
31.	Worrying too much about things	3.838	0.698	High
32.	Feeling no interest in things	3.779	0.873	High
33.	Feeling fearful	3.736	0.761	High
34.	Your feelings being easily hurt	3.854	0.838	High
35.	Other people being aware of your private thoughts	3.730	0.919	High
36.	Feeling others do not understand you or are unsympathetic	3.728	0.813	High
37.	Feeling that people are unfriendly or dislike you	3.694	0.924	High
38.	Having to do things very slowly to insure correctness	3.702	0.840	High
39.	Heart pounding or racing	3.770	0.831	High
40.	Nausea or upset stomach	3.787	0.841	High
41.	Feeling inferior to others	3.664	0.838	High
42.	Soreness of your muscles	3.660	0.935	High

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Table IX. Cont.

No.	Item	Mean	SD	Level of importance
43.	Feeling that you are watched or talked about by others	3.713	0.709	High
44.	Trouble falling asleep	3.936	0.797	High
45.	Having to check and double-check what you do	3.715	0.768	High
46.	Difficulty making decisions	3.681	0.870	High
47.	Feeling afraid to travel on buses, subways, trains	3.677	0.881	High
48.	Trouble getting your breath	3.665	0.723	High
49.	Hot or cold spells	3.860	0.717	High
50.	Having to avoid certain things, places, or activities because they frighten you	3.932	0.695	High
51.	Your mind going blank	3.900	0.556	High
52.	Numbness or tingling in parts of your body	3.875	0.783	High
53.	A lump in your throat	4.166	0.601	High
54.	Feeling hopeless about the future	4.089	0.581	High
55.	Trouble concentrating	4.009	0.549	High
56.	Feeling weak in parts of your body	3.817	0.809	High
57.	Feeling tense or keyed up	3.925	0.621	High
58.	Heavy feelings in your arms or legs	4.119	0.675	High
59.	Thoughts of death or dying	3.915	0.774	High
60.	Overeating	3.932	0.656	High
61.	Feeling uneasy when people are watching or talking about you	3.991	0.716	High
62.	Having thoughts that are not your own	3.068	0.539	High
63.	Having urges to beat, injure, or harm someone	3.247	0.685	High
64.	Awakening in the early morning	3.032	0.493	High
65.	Having to repeat the same actions such as touching, counting, washing	3.664	0.838	High
66.	Sleep that is restless or disturbed	3.660	0.935	High
67.	Having urges to break or smash things	3.713	0.709	High
68.	Having ideas or beliefs that others do not share	3.936	0.797	High
69.	Feeling very self-conscious with others	3.715	0.768	High
70.	Feeling uneasy in crowds, such as shopping or at a movie	3.681	0.870	High
71.	Feeling everything is an effort	3.677	0.881	High
72.	Spells of terror or panic	3.665	0.723	High
73.	Feeling uncomfortable about eating or drinking in public	3.860	0.717	High
74.	Getting into frequent arguments	3.932	0.695	High
75.	Feeling nervous when you are left alone	3.900	0.556	High
76.	Others not giving you proper credit for your achievements	3.166	0.601	High
77.	Feeling lonely even when you are with people	3.089	0.581	High
78.	Feeling so restless you couldn't sit still	3.009	0.549	High
79.	Feelings of worthlessness	2.817	0.409	High
80.	Feeling that familiar things are strange or unreal	3.925	0.621	High
81.	Shouting or throwing things	3.787	0.841	High
82.	Feeling afraid you will faint in public	2.736	0.561	High
83.	Feeling that people will take advantage of you if you let them	3.660	0.935	High
84.	Having thoughts about sex that bother you a lot	3.715	0.768	High

Table IX. Cont.

No.	Item	Mean	SD	Level of importance
85.	The idea that you should be punished for your sins	3.787	0.841	High
86.	Feeling pushed to get things done	3.736	0.761	High
87.	The idea that something serious is wrong with your body	3.660	0.935	High
88.	Never feeling close to another person	2.715	0.568	High
89.	Feelings of guilt	3.878	0.568	High
90.	The idea that something is wrong with your mind	3.704	0.703	High

of IBD in parents who lost a child in Denmark. These findings provide credence to the ideas of over 75% of IBD patients who believe that stress or their individual personalities play a significant role in the onset of their condition [13, 15] and more than 90% who believe that it affects their disease activity [16, 20].

Many of the symptoms of IBD that patients experience could be brought on by changes in GI function caused by stress. A densely innervated nerve plexus connects the brain-gut axis, also known as the enteric nervous system (ENS), and its spinal and autonomic connections to the central nervous system. Psychological and emotional stress can have a direct or indirect impact on this axis, affecting GI motor, sensory, and secretory function as well as pain thresholds [16]. Substance P (SP), vasoactive intestinal protein (VIP), many neuropeptides, neurotransmitters, and hormones [15, 21, 22] all play a role in mediating these effects. Corticotrophin-releasing factor (CRF) is secreted at times of stress, either from the central nervous system or from its periphery (hypothalamus and adrenal cortex, resp.). Peripheral CRF directly affects gastrointestinal motility, whereas central CRF controls the ACTH-cortisol system. The reduction of upper GI tract motility and enhancement of colonic motility in stress which is mediated by endogenous CRF [15, 23]. As a result, attributed symptoms like stomach discomfort and changes in bowel habits that occur in people with IBD but no obvious disease activity may, at least in some cases, lead to changes in motor and sensory function brought on by psychological stress.

Additionally, psychological stress can increase intestinal permeability, most likely because of changes in the cholinergic nervous system and the function of mucosal mast cells [24]. Söderholm and Perdue [25] made the observation that different kinds of physical and psychological stress have an effect on a number of intestinal barrier function components, including increasing intestinal permeability and promoting the secretion of ions, water, mucus, and even IgA. Reduced mucosal barrier function and altered bacteria-host interactions are the results of this increased permeability [15, 26]. However, these findings are likely to have an impact on the pathophysiology of IBD in humans, based primarily on animal studies. It certainly qualifies as one of the factors that influence illness relapse [15, 17, 18].

The pathophysiology of human IBD is probably affected by these observations, which are primarily based on animal studies. Finally, stress may influence IBD by way of the immune system [18, 22]. On the one hand, it is thought that people with IBD are susceptible to inflammation because of an improperly regulated response inside the intestinal epithelium. The immune defence system's dysfunction and its cells' cross-reactivity with host epithelial cells have been identified as 2 key mechanisms via which the inflammatory process takes place [5]. On the other hand, it is increasingly acknowledged that the immune system could directly interact with the hypothalamus-pituitary-adrenal (HPA) axis, autonomic nervous system (ANS), and ENS. In the pathophysiology of IBD, cytokines are crucial immunological components [27, 28]. Numerous studies [18, 23, 29, 30] found that stress, whether it be chronic or acute, can change the profiles of certain cytokines and hormones, including IL-1, IL-6, IL-10, IL-4, and TNF, which may have an impact on the pathophysiology of IBD. The gastrointestinal tract has two-way contact between neurons and mast cells [31], and tension can activate mucosa mast cells [18, 32]. The pathophysiology of IBD may be influenced by stress-induced activation of mast cells through the release of mediators such as eicosanoids, serotonin, and IL-6. In addition to the direct channels already indicated, stress can also have an indirect impact on the IBD clinical course. These indirect impacts include poor medication adherence [33] and smoking [34], which are known to encourage relapse [17]. Stress can affect the progression of IBD through both direct and indirect pathways.

Conclusions

There is a strong correlation of mental and psychological status to disease activity in patients with inflam-

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matory bowel disease using the SCL-90 R questionnaire. This might call for screening and therapy that take a systemic, comprehensive approach. Future research should incorporate case-control, population-based studies with comparison groups for both healthy people and people with chronic illnesses, as well as prospective, randomised control studies to gather information on patients' mental health and other symptoms, such as pain, who have active IBD or who are in remission. This may shed light on any underlying causes and the appropriate use of healthcare; it might also address the significant problem of illness as a sign of dormant IBD and its connection to worry and depression. Studies will be uniform if structured clinical interviews, established screening tools, and clinical diagnostic tests are used. This will thus raise the standard of research in this field and, in turn, inform medical professionals and patients on the most effective course of action.

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Conflict of interest

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