Cynical Distrust, Alexithymia, and Quality of Sleep among Patients with Inflammatory Bowel Diseases: A Descriptive Correlational Study

[1]Mahmoud Abdelwahab Khedr, [2]Shahera Shehata Harby, [3]Shaimaa Mohamed Nageeb, [4]Eman Abdeen Ali,

[1]Lecturer of Psychiatric Nursing and Mental Health, Faculty of Nursing, Alexandria University, Egypt. Email: khedrmahmoud89@yahoo.com

[2]Lecturer of Medical surgical Nursing, Faculty of Nursing, Alexandria University, Egypt.

[3]Lecturer of Psychiatric Nursing and Mental Health, Faculty of Nursing, Zagazig University, Egypt.

[4]Lecturer of Medical surgical Nursing, Faculty of Nursing, Alexandria University, Egypt.

Abstract

Background: Inflammatory bowel diseases as ulcerative colitis and Crohn's disease negatively affects many aspects of the patient's life, including psychological patterns, emotional reactions, and sleep quality. **The study was aimed to:** determine the relationship between cynical distrust, alexithymia, and quality of sleep among patients with inflammatory bowel diseases. **Design:** This study employed a descriptive correlational design. **Setting:** It was held at Alexandria's main University hospital's Gastrointestinal Tract (GIT) department. A purposive sample of 100 patients with the diagnosis of IBD (50 patient with Crohn's Disease & 50 patient with ulcerative colitis. **Methods:** Data were collected using four different tools: Socio-demographic & Clinical data structured interview schedule, Cynical Distrust Scale, Toronto Alexithymia Scale and the Pittsburgh Sleep Quality Index. **Results:** The current study finding revealed that 86.4% of patients with Crohn's disease, and 87.5% of patients with ulcerative colitis who had high cynical distrust demonstrated alexithymia. In addition, 95.5% of patients with Crohn's disease, and 87.5% of patients with ulcerative colitis who had high cynical distrust display poor sleep quality. **Conclusion:** The current study established a statistically significant positive correlation between cynical distrust, alexithymia, and poor sleep quality among patients with inflammatory bowel disorders. **Recommendation:** Counseling for adequate sleep and emotional expressiveness can positively impact the phase of the disease. Additionally, assessing and intervening sleep and emotional disruptions in patients with inflammatory bowel diseases can aid in optimizing medicinal care and maintaining illness remission, as well as potentially modify disease prognosis.

Keywords: Cynical distrust; Alexithymia; Quality of sleep; inflammatory bowel diseases

Introduction

Inflammatory bowel diseases (IBD) refers to chronic inflammatory diseases of the gastrointestinal tract, including ulcerative colitis and Crohn's disease **(Sddah, 2011)**. Crohn's disease is an IBD that induces inflammation throughout the digestive system lining, whereas ulcerative colitis induces lengthy inflammation in a specific digestive tract region (mainly the colon). Inflammatory bowel diseases have an etiology that is not well recognized. Several factors, including but not restricted to bacterial infection, immune system alterations, and genetic variation, have been postulated to have an impact in the advancement of this category of diseases **(Fakhoury, Negrulj, Mooranian, & Al-Salami, 2014)**. Ulcerative colitis (UC) is characterized by recurring bouts of diarrhea accompanied by mucus and/or pus. The colon is the only part of the body affected, and the inflammation is restricted to the mucosal membrane. Crohn's disease (CD) is characterized by abdominal pain, fever, and diarrhea. Moreover, a transmural inflammation can damage the entire gastroenteric system **(Lamb et al., 2019; Van Assche et al., 2010)**.

Due to its long-term course, frequent need and dependency on medical care, high costs of treatment and dietary restrictions, difficult mingling in society, and fear of malignant transformation, IBD has a detrimental impact on many aspects of the patient's life, including psychological patterns. Hostility is one of these patterns which significantly associated with the progression of inflammatory bowel diseases **(Ilias et al., 2020)**. Chronic hostility and anger are believed to overstimulate the hypothalamic-pituitary-adrenal (HPA) and sympathetic-adrenal-medullary (SAM) axis, resulting in widespread cortisol and catecholamine release. Catecholamines and cortisol are recognized as catalysts in systemic inflammatory processes, while anti-inflammatory in the short term is thought to cause chronic inflammation **(Shivpuri et al., 2011)**. Chronic cortisol secretion is thought to cause adrenal exhaustion and glucocorticoid receptor resistance, resulting in a breakdown of the glucocorticoid anti-inflammatory feedback system and increased inflammation. Similarly, persistent cortisol release is thought to increase vulnerability to secondary inflammation through down-regulating the immune response **(Hänsel, Hong, Cámara, & Von Kaenel, 2010)**.

Hostility involves anger, quarrelsomeness, or inclinations across mistrust, cynicism, and others' denigration **(Girard, Tardif, Boisclair Demarble, & D'Antono, 2016)**. Cynical hostility or cynical distrust is a type of hostility that is triggered by the inflammatory process in IBD, and this has an adverse impact on the people's cooperation with the therapist, as well as the patient's relationship with his or her family, which can contribute to a decrease in compliance, as well as a worsening of the patient's state and prognosis of the disease **(Bargiota, Sakkas, Hyphantis, & Angeloopulos, 2016)**. Cynical distrust also means the tendency to suppose that individuals are ethically bankrupt and will engage in deception to maximize self- interests **(Stavrova, Ehlebracht, & Vohs, 2020)**.

Alexithymia is a disordered psychological pattern and personality feature that can occur in conjunction with a range of medical and psycho-pathological diseases. It can also be a transient state correlated with psycho-pathological circumstances and stress-related issues rates **(Association, 2013; Brooks et al., 2019)**. Alexithymia is a multidimensional circumstance marked by a deficiency in differentiating between thinking, physiological and emotional responses to stimuli which involves difficulty in expressing and recognizing emotions and externally regulated thinking **(Martino et al., 2020)**.

People suffering from alexithymia with IBD may experience severe relapses and a worsening course of IBD, which could partly be explained by inability to distinguish body signals, emotions, and perceptions **(Viganò et al., 2018)**. Moreover, the difficulty to recognize emotional perceptions and physical symptoms may result in a delay in diagnosis and IBD treatment, increased physical and psychological pain, and poor perceived quality of life. These symptoms affect the patient's ability to adapt and manage the disease **(Faust, Halpern, Danoff-Burg, & Cross, 2012)**.

Due to the high prevalence of IBD in the developing countries, it is thought that stress, anxiety, alexithymia, and sleep problems may have an important role in the clinical course and etiopathogenesis of the disease **(Sgambato, Miranda, Ranaldo, Federico, & Romano, 2017)**. The relation between alexithymia and poor sleep quality has been documented in several studies **(Alimoradi et al., 2021; Murphy, Wulff, Catmur, & Bird, 2018)**.

The association between IBD and poor sleep quality is bidirectional, i.e., disease exacerbation leads to sleep disturbances, and the latter increases the disease activity **(Swanson, Burgess, & Keshavarzian, 2011)**. The reasons for sleep problems in IBD are so far unclear. Possible causes include, for example, disease associated symptoms (pain, stress, and depression), medical treatment (corticosteroid), and disease-related immune changes **(Pirinen, Kolho, Ashorn, & Aronen, 2014)**. Disturbed sleep may further exacerbate the disease and

burden the adolescent in such a way that behavioral and emotional symptoms may arise **(Sochal et al., 2020)**. It was reported that over 75% of patients with active Crohn's disease (CD) and ulcerative colitis (UC) suffer from self-reported poor sleep **(Iskandar et al., 2020; Sofia et al., 2020)**. Several studies on sleep quality among IBD patients have been published **(Ananthakrishnan et al., 2014; Sobolewska-Wlodarczyk et al., 2018; Sochal, et al., 2020)**.

Significance of the Study

Considering the significance and relatively high prevalence of sleep and emotional problems among patients with inflammatory bowel diseases, the current literature lacks an adequate reports which investigated the relationship between psychological disturbances as cynical hostility and alexithymia in patients with IBD and their sleep quality **(Gingold-Belfer et al., 2014)**. It is crucial for nurses to obtain this information so that they can provide early and essential interventions for sleep and emotional difficulties among these patients. Studying the relationship between cynical hostility, alexithymia and sleep quality appears to be a promising method and targeting such issues might represent a modifiable determinant of IBD related outcomes**(Gîlc-Blanariu et al., 2020)**. Thus, the goal of this study is to determine the relationship between cynical distrust, alexithymia, and quality of sleep among patients with inflammatory bowel diseases.

Aim of study:

The current study aimed to determine the relationship between cynical distrust, alexithymia, and quality of sleep among patients with inflammatory bowel diseases through:

• Assess the levels of cynical distrust, alexithymia, and quality of sleep among patients with IBD.

• Identify the relationship between cynical distrust and alexithymia among patients with IBD.

• Identify the relationship between cynical distrust and quality of sleep among patients with IBD.

• Identify the relationship between alexithymia and quality of sleep among patients with IBD.

Research Question:

To fulfill the aim of this study, the following question will be formulated:

• What are the levels of cynical distrust, alexithymia, and quality of sleep among patients with inflammatory bowel diseases?

• What is the relationship between cynical distrust, alexithymia, and sleep quality among patients with inflammatory bowel diseases?

Operational Definitions:
• **Cynical distrust:**

Believing that people are motivated only in all their behaviors by selfishness, ignoring the sincerity of people's motives and actions, or the value of life.

• **Alexithymia:**

Subclinical phenomenon which mainly involves lack of emotional awareness or, more specifically, difficulty in recognizing and describing feelings and in distinguishing emotions from the physical sensations of emotional arousal.

• **Quality of sleep:**

Individual satisfaction of the sleep experience, integrating aspects of sleep initiation, sleep maintenance, and awakening refreshment. It comprised of 7 components: subjective sleep quality, sleep latency, sleep duration, habitual sleep efficiency, sleep disturbances, use of sleeping medication and daytime dysfunction.

I-Technical Design:

The technical design includes the research design, setting, sample and tools used in the study

A- Research design:

This study employed a descriptive correlational design.

B- etting:

The study was performed at the Gastrointestinal tract (GIT) department at Alexandria main University hospital. This department is composed of (2) units; 1 unit for male patients, which contains about (12) beds, and (1) unit for female patients, which contains about (10) beds.

C- Sampling

A purposive sample of adult patients with an IBD diagnosis (50 with Crohn's Disease and 50 with ulcerative colitis) was recruited from the above-mentioned setting meeting the following criteria:

• Diagnosis of IBD based on clinical, radiological, endoscopic, and histopathological criteria.

• Age group from 15-60 years old.

• Free from any psychiatric disorders

• No use of hypnotic drugs use

• Having the capacity to communicate verbally.

• Willing to participate in the research.

The sample size was calculated utilizing the EPI INFO 7 program with the subsequent criteria:

• Population size = 240 for 3 months.

• Acceptable error = 10%

• Expected frequency = 50%

• Confidence co-efficient = 95%

• Minimum estimated sample size = 100

D- Tools of the study:

Three tools will be utilized for data collection.

Tool I: Socio-demographic &Clinical data structured interview schedule

It was developed by the researchers to obtain information about bio sociodemographic and clinical data of the studied patients. It consisted of two parts as the following:

Part I: Sociodemographic data: this part was used to collect data about the patient's sociodemographic characteristics. It included data as, age, sex, residence, marital status, level of education, occupation, monthly income from the patient's point of view and so on.

Part II: Patients' clinical data: This part was utilized to obtain data about the clinical history of the patients. It included data as; duration of illness, history of smoking family history of IBD, age at first diagnosis.

Tool II: Cynical distrust scale (CDS)

The Cynical Distrust Scale (CDS) was utilized as a self-report questionnaire. It is an eight-item scale based on the Cook-Medley Hostility Inventory **(Cook & Medley, 1954)**, and it was discovered to be a valid and reliable indicator of cynicism **(Greenglass & Julkunen, 1989)**. Reduced scale scores indicate that the respondent thinks others are deceitful and only concerned with their own interests **(Miller, Jenkins, Kaplan, & Salonen, 1995)**. The response categories were changed from true-false to a four-point Likert scale. Items were reversed scored and added together to provide a CDS score varying from 0 to 24, with greater rates reflecting greater levels of cynical distrust. The response options are as follows: "completely agree" (3 points), "somewhat agree" (2 points), "somewhat disagree" (1 point), and "completely disagree" (0 points). The cutoffs of the separate groups were 0–9 (low), 10–14 (moderate), and 15–24 (high) points.

Tool III: Toronto Alexithymia Scale (TAS-20)

The Toronto Alexithymia Scale (TAS-20) was developed by **(Bagby, Taylor, & Parker, 1994)**, and it is a self-administered questionnaire consisting of twenty items that examine the trouble in identifying and expressing emotions, which is a significant symptom of alexithymia. On a 5-point Likert scale, 1 indicates strong disagreement, and 5 indicates complete agreement. There are five elements with a negative key (items 4, 5, 10, 18, and 19). The overall alexithymia score is calculated by summing the responses to all twenty items, whereas the value for each subscale element is calculated by adding those responses. The TAS-20 has cutoff scoring; equal to or less than 51 = non-alexithymia, equal to or greater than 61 = alexithymia and scores of 52 to 60 = possible alexithymia.

The TAS-20 is composed of 3 subscales:

• **Difficulty Describing Feelings subscale** is used to measure difficulty describing emotions. 5 items – 2, 4, 11, 12, 17.

• **Difficulty Identifying Feeling subscale** is used to measure difficulty identifying emotions. 7 items – 1, 3, 6, 7, 9, 13, 14.

• **Externally-Oriented Thinking subscale** is used to measure the tendency of individuals to focus their attention externally. 8 items – 5, 8, 10, 15, 16, 18, 19, 20.

It demonstrates good internal consistency (Cronbach's alpha = .81) and test-retest reliability (.77, p-value <.01). Additionally, research using the TAS-20 demonstrates adequate levels of convergent and concurrent validity **(Bagby, et al., 1994)**. It has also been found to be stable and replicable across clinical and nonclinical populations. In the last years, there have been validation reports in Arabic population **(El Abiddine et al., 2017)**.

Tool IV: The Pittsburgh Sleep Quality Index (PSQI):

It is a self-report instrument designed to evaluate the quality and frequency of sleep throughout the past month. It was developed and validated by Buysse et al. in 1989**(Buysse, Reynolds III, Monk, Berman, & Kupfer, 1989)**. It has nine questions; question number five contains ten sub-items (5a to 5j). All questions are combined to form seven components.

Answers were graded on a scale of zero to three. In all circumstances, a score of "0" implies that there is no difficulty, but a score of "3" demonstrates that there is a significant difficulty. The seven component scores were then summed together to produce a single "global" score varying from (0 to 21) points, with "0" demonstrates no difficulty and "21" demonstrates the significant difficulty in all categories. Patients with a score of 0 to 5 were regarded to have good sleep quality, whereas those with a score of 6 to 21 were considered to have a poor sleep quality. Although five questions request information about the patient's roommate or bedmate, these questions are not scored and are not included in the scale's final score. These inquiries started from (questions 10a to 10e).

The followings are the seven components and their scoring:

- Component 1: Subjective sleep quality (question 6): The score ranges from "0" for "very good" to "3" for "very bad".

- Component 2: Sleep latency (questions 2 and 5a): As for question 2, the score ranges from "0" for "≤ 15 minutes" to "3" for "> 60 minutes". Regarding question 5a, the score ranges from "0" for "not during the past month" to "3" for "three or more times a week". The final score of sleep latency component represents the sum of question 2 and 5a scores. It ranges between "0" if the sum of the two questions is "0" and "3" if the sum of them is "5-6"

- Component 3: Sleep duration (question 4): The score ranges from "0" for "> 7 hours" to "3" for "<5 hours".

- Component 4: Habitual sleep efficiency (question 1, 3 and 4): It represents the number of hours slept (question 4) / number of hours spent in bed (questions 1and 3) x100. The final score ranges between "0" if the habitual sleep efficiency (>85 %) and "3" if the habitual sleep efficiency (<65 %).

- Component 5: Sleep disturbances (questions 5b-5j): The score of these questions ranges from"0" for "not during the past month" to "3" for "three or more times a week". The final score of sleep disturbances represents the sum of scores of all questions (5b-5j). It ranges from "0" if the sum scores is "0" to "3" if the sum scores is "19-27".

- Component 6: Use of sleeping medication (question 7): The score ranges from "0" for "not during the past month "to "3" for "three or more times a week".

- Component 7: Daytime dysfunction (questions 8 and 9): The score of question 8 ranges from "0" for "never" to "3" for "three or more times each week". The score of question 9 ranges between "0" for "no problem at all" and "3" for "a very big problem". The final score of the component represents the sum of scores of these two questions. It ranges between "0" if the sum scores is "0" and "3' if the sum scores is "5-6".

The PSQI was tested for internal consistency and a reliability coefficient by both Buysse et al. (1989) and Backhaus et al. (2002). It was proved that the overall PSQI global score correlation coefficient was 0.83 and 0.87 respectively**(Backhaus, Junghanns, Broocks, Riemann, & Hohagen, 2002; Buysse, et al., 1989)**.

II. Operation design:

A- Administrative steps:

Official permissions were obtained from the responsible authorities at the faculty of nursing and the Gastrointestinal Tract department at Alexandria main university hospital.

B- Preparatory Phase

This phase was started by reviewing the current and past related literature in relation to the subjects of the study, using related articles, journals, and textbooks. This review helped the researcher in developing the socio-demographic &clinical data schedule (tool I). Tools II, III, and IV were adopted, then revised by five experts in the fields of psychiatric nursing and medical surgical nursing to test the tools for content validity, completeness, clarity of the items and applicability on Egyptian patients' culture. The necessary modifications were modified accordingly.

C- Pilot study:

A pilot study was performed on ten patients who met the inclusion criteria to assess the research tools' transparency, relevance, objectivity, application, and viability. This population of patients was excluded from the study sample.

D- Test of reliability

Cronbach's Alpha was used to measure the internal consistency of the study tools. They proved to be reliable; tool II ($\alpha=0.861$), tool III ($\alpha=0.785$), and tool IV ($\alpha=0.857$).

E- Field Work

- The researcher visited the GIT department 3 days per week from 9am to 1 pm, each patient who meets the inclusion criteria and willing to participate in the research study was interviewed individually after explaining the purpose of the study. The researchers reassured the patients about anonymity and confidentiality of their responses, and then an informed consent was obtained from those who accepted to participate in the study.

- Inclusion criteria were determined by reviewing medical charts and communicating with the patient individually. Clinical data were double checked by reviewing patients' medical records.

- A representative sample from the patients was recruited through purposive sampling after excluding the patients who participated in the pilot study.

- Data were collected over a period of four months starting from August to December 2021.

Limitation of this study:

The limitation of this study includes the use of subjective noninvasive methods to assess the quality of sleep via the PSQI. Future research needed to include other measures as polysomnography and actigraphy for better understanding of the nature of sleep disturbances in IBD patients. Another limitation is the outbreak of coronavirus during period of data collection which sometimes slowed down the rate of data collection. Furthermore, preventative measures for coronavirus protection, such as wearing a face mask and maintaining a safe distance from patients, disrupt excellent nonverbal communication with patients. Finally, the limited number of retrieved studies, which is also a strength of the study, as it highlights the lack of empirical findings and the need for further research in the field.

Ethical Considerations:

A research ethics committee at the Faculty of Nursing, Alexandria University approved the study. Patients were informed about the purpose of the study and an informed written consent was obtained. Also, they were told that they have the right to refuse participating in the study and their choice has no bearing on their care. In addition, they were also told that they have the right to withdraw from the study at any moment even after starting and that their privacy and confidentiality will be protected.

Data Statistical analysis:

IBM SPSS version 20 was used to input the coded data for the calculations. Further rounds of verification and checking were

performed after entering data to guarantee there were no errors during the data entry process.

Descriptive statistics:

Descriptive statistics were utilized to characterize clinical and demographic variables, while quantitative data were reported and summarized by numbers and percentages. The words minimum and maximum were used to define and summarize quantitative data. In statistical tests of significance, the mean (X) was employed to estimate the central tendency. As the average of standard deviations from the mean (SD) is determined, it is used to evaluate the variability in a sample set of scores.

Analytical statistics:

The Kolmogorov-Smirnov method was conducted to test the normality of quantitative variable distributions. Using parametric testing was recommended due to the test results showing that the data was normally distributed. To contrast categorical variables, the Chi-square test was used. Monte Carlo adjustment was used to fix the chi-square when more than 20% of cells had an expected count of lower than 5. To compare two groups of regularly distributed quantitative data, the Student T-test was used. The Mann-Whitney test was devised for abnormally distributed quantitative variables, to compare between two studied groups. All statistical tests were judged at 0.05 significance level.

Results

Table (1) demonstrates the sociodemographic characteristics of the studied patients and revealed that 36% of the patients who have Crohn's disease were aged between 30 to less than 45 years, while 36% of the patients who have ulcerative colitis were aged between 16 to less than 30 years. It also showed that 58% of patients with Crohn's disease were males, while 60% of those with ulcerative colitis were females. The table also reveals that 55% of patients were single and 58 % of them had basic education. It was also found that 40% of patients with Crohn's disease were craft workers, while 42% of patients with ulcerative colitis were housewives. Table (1) also revealed that 52% of patients with Crohn's disease were

considering their income as not enough, while 52% of patients with ulcerative colitis were considering their income as enough. The work was considered as the source of income for 60% of patients with Crohn's and 56% of patients with ulcerative colitis. Partners in home for 55% of patients were parents and brothers. This table also showed that 81% of patients were caring for themselves.

Table (2) illustrates the clinical data of the studied subjects and showed that 58% of the studied patients, either Crohn's disease or ulcerative colitis had a disease duration from 1 year to less than 5 years. Also, it showed that 72% of patients were diagnosed with the disease after the age of 15 years. These data demonstrated that 66% of patients with Crohn's disease and 80% of patients with ulcerative colitis had never smoked. Additionally, it demonstrated that 72% of patients with Crohn's disease and 76% of patients with ulcerative colitis did not have a family history of the condition.

Table (3) reveals mean scores and levels of cynical distrust among the studied patients. It revealed that patients with Crohn's disease had a mean score of 12.48 ± 6.45 on cynical distrust, compared to a mean score of 10.04 ± 5.57 for those who had ulcerative colitis. A statistically significant difference was noticed between patients with Crohn's disease and those with ulcerative colitis in relation to their mean score of cynical distrust (t=2.025, p= 0.046).

Figure (1) reveals that 44% of patients with Crohn's disease had high level of cynical distrust compared to 16% of those with ulcerative colitis. In addition, 56% of patients with ulcerative colitis had moderate cynical distrust compared to 22% of those with Crohn's disease.

Table (4) presents mean scores and levels of alexithymia of the studied patients. It was noticed that patients with Crohn's disease had a mean score of 62.54 ± 5.83 on Alexithymia, compared to a mean score of 62.54 ± 5.83 for those who had ulcerative colitis.

A statistically significant difference was noticed between patients with Crohn's disease and those with ulcerative colitis in relation to their mean score of alexithymia (U = 693.50, p < 0.001).

Figure (2) illustrates that 62% of patients with Crohn's disease had alexithymia compared to 24% of those with ulcerative colitis.

Table (5) shows statistically significant difference between patients with Crohn's disease and those with ulcerative colitis in relation to mean score on their difficulty describing feelings subscale (U = 667.00, p < 0.001). Mean score of patients with Crohn's disease was 15.72 ± 1.91, compared to a mean score of 13.78 ± 2.38 for those who had ulcerative colitis.

Also, statistically significant difference was found between patients with Crohn's disease and those with ulcerative colitis in relation to mean score on their difficulty identifying feeling subscale (U = 685.00, p < 0.001). Mean score of patients with Crohn's disease was 23.16 ± 4.63, compared to a mean score of 19.16 ± 5.80 for those who had ulcerative colitis.

Table (6) presents the distribution of the studied patients according to The Pittsburgh Sleep Quality Index (PSQI). Concerning the global score of PSQI, it ranged between 0.0 to 21.0, with a mean of 9.68 ± 5.80 and a median of 8.0. It was observed that 80% of the studied patients with Crohn's disease and 54 % of patients with ulcerative colitis had poor sleep quality.

Regarding the first component "sleep quality", it was found that 40 % of the patients with Crohn's disease perceived their sleep quality as fairly bad, while 44% of patients with ulcerative colitis perceived it as fairly good. Concerning "sleep latency", on a score ranging between 0 - 6, with a higher score indicating more time in sleep latency and lower score indicating less time in sleep latency, more than one third (42%) of patients with Crohn's disease had a score between 1 and 2. Also, 30% of patients with ulcerative colitis had a score between 3-4.

Concerning the "sleep duration", it was measured according to the length of actual patient's sleep time. It ranged from sleeping more than 7 hours to less than 5 hours at night, with increased length of sleep time indicating good sleep duration. It was found that 38 % of patients with Crohn's disease and 40% of patients with ulcerative colitis reported sleeping from 5 to 6 hours,

As for the component of "habitual sleep efficiency", which calculated as follows: (number of hours slept / number of hours spent in bed) x 100. It ranged from more than 85% to less than 65%, with a score more than 85% indicating very good habitual sleep efficiency, while a score less than 65% indicating very poor habitual sleep efficiency. It was noticed that 34 % of patients with Crohn's disease and 58% of patients with ulcerative colitis had a score from 75% to 84 % in habitual sleep efficiency.

As regards "sleep disturbances", it was measured on a score ranging between 0 and 27, with a higher score indicating increasing level of sleep disturbances. It was found that 38 % of patients with Crohn's disease had a score from 10-18, while 46% of patients with ulcerative colitis had a score from 1-9. As for "daytime dysfunctions" component, it was measured on a score ranging between 0 - 6, with a higher score indicating increase in daytime dysfunctions and lower score indicating decrease in daytime dysfunctions. Table (6) reveals that **46** % of patients with Crohn's disease and 50% of patients with ulcerative colitis had a score between (1-2) in daytime dysfunctions.

Figure (3) reveals that 80 % of the studied patients with Crohn's disease and 54 % of patients with ulcerative colitis had poor sleep quality.

Table (7) shows the relationship between cynical distrust and both alexithymia, and quality of sleep among studied patients with inflammatory bowel diseases. It was found that 86.4% of patients with Crohns disease, and 87.5% of patients with ulcerative Colitis who had high cynical distrust demonstrated alexithymia, compared to 0% of those patients with Crohns disease and ulcerative Colitis who had high cynical distrust and non-alexithymia. A statistically significant relationship was found between cynical distrust and alexithymia in Crohns disease (χ^2 = 11.942, P = 0.007) and ulcerative Colitis (χ^2 = 19.490, P < 0.001).

This table also illustrates that 95.5% of patients with Crohns disease, and 87.5% of patients with ulcerative Colitis who had high cynical distrust display poor sleep quality. A statistically significant relationship was found between cynical distrust and poor sleep quality in Crohns disease ($\chi^2 = 6.444$, P = 0.035) and ulcerative Colitis ($\chi^2 = 18.665$, P < 0.001).

Table (8) reveals relationship between alexithymia and quality of sleep among studied patients with inflammatory bowel diseases. A statistically significant relationship was found between alexithymia and quality of sleep among patients with ulcerative colitis ($\chi^2 = 6.574$, P = 0.037). This table shows that 83.3% of patients who had alexithymia had poor sleep quality, compared to only 16.7% of those who had alexithymia and good sleep quality.

Table (1): Comparative assessment of the studied patients based on socio-demographic data

	Total (n = 100)		Medical diagnosis				χ^2	p
			Crohn's disease (n = 50)		Ulcerative Colitis (n = 50)			
	No.	%	No.	%	No.	%		
Socio-demographic data								
Age in years								
(16 < 30)	33	33.0	15	30.0	18	36.0		
(30 < 45)	33	33.0	18	36.0	15	30.0	1.112	0.774
(45 ≤ 60)	24	24.0	13	26.0	11	22.0		
(> 60)	10	10.0	4	8.0	6	12.0		
Gender								
Male	49	49.0	29	58.0	20	40.0	3.241	0.072
Female	51	51.0	21	42.0	30	60.0		
Residence area								
Urban	58	58.0	25	50.0	33	66.0	2.627	0.105
Rural	42	42.0	25	50.0	17	34.0		
Marital status								
Single	55	55.0	27	54.0	28	56.0		
Married	40	40.0	19	38.0	21	42.0	2.001	MCp= 0.694
Divorced	1	1.0	1	2.0	0	0.0		
Widow	4	4.0	3	6.0	1	2.0		
Level of education								
Illiterate	11	11.0	6	12.0	5	10.0		
Read and write	11	11.0	4	8.0	7	14.0		
Basic education	58	58.0	27	54.0	31	62.0	3.251	0.517
Secondary education	7	7.0	4	8.0	3	6.0		
University education	13	13.0	9	18.0	4	8.0		
Current Occupation								
Not work	15	15.0	10	20.0	5	10.0		
Clerk work	13	13.0	6	12.0	7	14.0		
Manual	8	8.0	4	8.0	4	8.0	7.132	0.129
Craft work	33	33.0	20	40.0	13	26.0		
Housewife	31	31.0	10	20.0	21	42.0		
Income								
Not Enough	46	46.0	26	52.0	20	40.0		
Enough	49	49.0	23	46.0	26	52.0	2.616	MCp= 0.282
More than enough	5	5.0	1	2.0	4	8.0		
Source of income								
Work	58	58.0	30	60.0	28	56.0		MCp=
Family	35	35.0	15	30.0	20	40.0	2.000	0.395
Subventions	7	7.0	5	10.0	2	4.0		
Home participants								
Alone	5	5.0	4	8.0	1	2.0		MCp=
With spouse	40	40.0	19	38.0	21	42.0	1.784	0.498
With family (parents& brothers)	55	55.0	27	54.0	28	56.0		
Caregiver for patient								
No one	81	81.0	41	82.0	40	80.0	0.065	1.000
Family member	19	19.0	9	18.0	10	20.0		

χ^2: Chi-square test   MC: Monte Carlo   p: p-value for contrasting between the studied groups

Table (2): Comparative assessment of the studied patients based on clinical data

	Medical diagnosis						χ^2	p
	Total (n = 100)		Crohn's disease (n = 50)		Ulcerative Colitis (n = 50)			
	No.	%	No.	%	No.	%		
Clinical data								
Duration of the disease								
1< 5 years	58	58.0	29	58.0	29	58.0		
5 < 10 years	30	30.0	16	32.0	14	28.0	0.467	0.792
10 < 15 years	12	12.0	5	10.0	7	14.0		
Age at first diagnosis in years								
Lower than 15	28	28.0	14	28.0	14	28.0	0.000	1.000
15-	72	72.0	36	72.0	36	72.0		
History of smoking								
Yes	27	27.0	17	34.0	10	20.0	2.486	0.115
No	73	73.0	33	66.0	40	80.0		
Family history of the disease								
No	74	74.0	36	72.0	38	76.0		MCp=
First degree relationship	19	19.0	9	18.0	10	20.0	1.349	0.610
Second degree relationship	7	7.0	5	10.0	2	4.0		

χ^2: **Chi-square test**   MC: **Monte Carlo**   p: p-value for contrasting between the studied groups

Table (3): Mean scores and levels of cynical distrust among the studied patients

Cynical distrust scale	Medical diagnosis						Test of Sig.	p
	Total (n = 100)		Crohn's disease (n = 50)		Ulcerative Colitis (n = 50)			
	No.	%	No.	%	No.	%		
0–9 (low)	31	31.0	17	34.0	14	28.0		
10–14 (moderate)	39	39.0	11	22.0	28	56.0	χ^2= 14.234 *	0.001*
15–24 (high)	30	30.0	22	44.0	8	16.0		
Total Score	(0–24)							
Min. – Max.	0.0 – 22.0		2.0 – 22.0		0.0 – 20.0			
Mean ± SD.	11.26 ± 6.12		12.48 ± 6.45		10.04 ± 5.57			
Median	11.0		11.50		11.0			
Mean Score								
Min. – Max.	0.0 – 2.75		0.25 – 2.75		0.0 – 2.50			
Mean ± SD.	1.41 ± 0.76		1.56 ± 0.81		1.26 ± 0.70		t=2.025*	0.046*
Median	1.38		1.44		1.38			
% Score								
Min. – Max.	0.0 – 91.67		8.33 – 91.67		0.0 – 83.33			
Mean ± SD.	46.92 ± 25.50		52.0 ± 26.89		41.83 ± 23.19			
Median	45.83		47.92		45.83			

χ^2: **Chi-square test**   t: **Student t-test**   p: p-value for contrasting between the studied groups
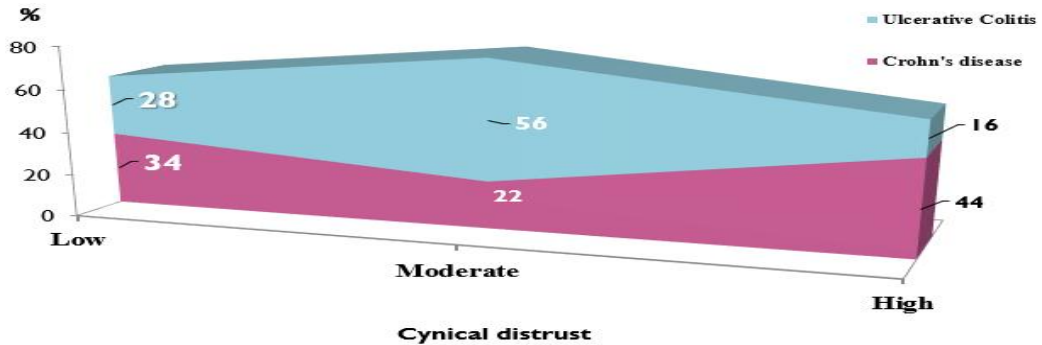*: Statistically significant at p-value less than or equal 0.05

Figure (1): Distribution of the Studied patients according to levels of cynical distrust (no =100)

Table (4): Comparison of the study groups' scores and levels of total Alexithymia

Toronto Alexithymia Scale (TAS-20)	Total (n = 100)		Medical diagnosis				Test of Sig.	p
			Crohn's disease (n = 50)		Ulcerative Colitis (n = 50)			
	No.	%	No.	%	No.	%		
Overall Toronto								
Non-alexithymia $\leq$ 51	19	19.0	2	4.0	17	34.0	$\chi^2=$ 20.659*	<0.001*
Possible alexithymia 52-60	38	38.0	17	34.0	21	42.0		
Alexithymia $\geq$ 61	43	43.0	31	62.0	12	24.0		
Total Score	(20–100)							
Min. – Max.	44.0 – 77.0		46.0 – 77.0		44.0 – 76.0			
Mean ± SD.	59.61 ± 7.75		62.54 ± 5.83		56.68 ± 8.35			
Median	60.0		62.0		58.50			
Mean Score								
Min. – Max.	2.20 – 3.85		2.30 – 3.85		2.20 – 3.80		U= 693.50*	<0.001*
Mean ± SD.	2.98 ± 0.39		3.13 ± 0.29		2.83 ± 0.42			
Median	3.0		3.10		2.93			
% Score								
Min. – Max.	30.0 – 71.25		32.50 – 71.25		30.0 – 70.0			
Mean ± SD.	49.51 ± 9.68		53.18 ± 7.29		45.85 ± 10.44			
Median	50.0		52.50		48.13			

χ^2: **Chi-square test**   **U: Mann Whitney test**
*: Statistically significant at p-value less than or equal to 0.05
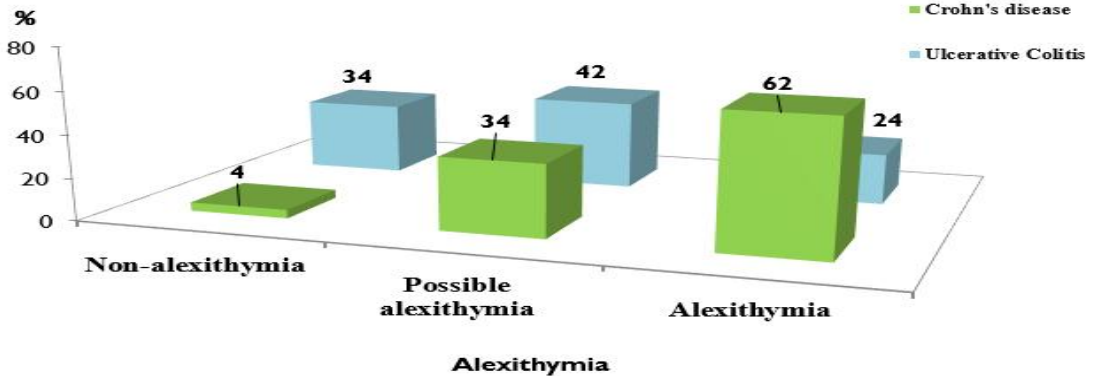

Figure (2): Distribution of the Studied patients according to levels of alexithymia (no =100)

Table (5): Comparison between the studied groups according Alexithymia subscales.

Toronto Alexithymia Scale (TAS–20)	Medical diagnosis		U	p
	Crohn's disease (n = 50)	Ulcerative Colitis (n = 50)		
Difficulty Describing Feelings subscale				
Total Score	**(5–25)**			
Min. – Max.	9.0 – 21.0	10.0 – 21.0	9.0 – 19.0	
Mean ± SD.	14.75 ± 2.35	15.72 ± 1.91	13.78 ± 2.38	
Median	15.0	15.0	15.0	
Mean Score				
Min. – Max.	1.80 – 4.20	2.0 – 4.20	1.80 – 3.80	
Mean ± SD.	2.95 ± 0.47	3.14 ± 0.38	2.76 ± 0.48	667.00*	<0.001*
Median	3.0	3.0	3.0		
% Score				
Min. – Max.	20.0 – 80.0	25.0 – 80.0	20.0 – 70.0	
Mean ± SD.	48.75 ± 11.77	53.60 ± 9.53	43.90 ± 11.88	
Median	50.0	50.0	50.0	
Difficulty Identifying Feeling subscale				
Total Score	**(7–35)**			
Min. – Max.	11.0 – 32.0	11.0 – 32.0	11.0 – 32.0	
Mean ± SD.	21.16 ± 5.60	23.16 ± 4.63	19.16 ± 5.80	
Median	21.0	22.0	19.0	
Mean Score				
Min. – Max.	1.57 – 4.57	1.57 – 4.57	1.57 – 4.57	
Mean ± SD.	3.02 ± 0.80	3.31 ± 0.66	2.74 ± 0.83	685.00*	<0.001*
Median	3.0	3.14	2.71		
% Score				
Min. – Max.	14.29 – 89.29	14.29 – 89.29	14.29 – 89.29	
Mean ± SD.	50.57 ± 19.98	57.71 ± 16.52	43.43 ± 20.73	
Median	50.0	53.57	42.86	
Externally-Oriented Thinking subscale				
Total Score	**(8–40)**			
Min. – Max.	17.0 – 28.0	17.0 – 28.0	21.0 – 26.0	
Mean ± SD.	23.70 ± 1.71	23.66 ± 2.09	23.74 ± 1.24	
Median	24.0	24.0	24.0	
Mean Score				
Min. – Max.	2.13 – 3.50	2.13 – 3.50	2.63 – 3.25	
Mean ± SD.	2.96 ± 0.21	2.96 ± 0.26	2.97 ± 0.16	1247.5	0.986
Median	3.0	3.0	3.0		
% Score				
Min. – Max.	28.13 – 62.50	28.13 – 62.50	40.63 – 56.25	
Mean ± SD.	49.06 ± 5.34	48.94 ± 6.52	49.19 ± 3.88	
Median	50.0	50.0	50.0	

U: Mann Whitney test   p: p-value for contrasting between the studied groups
*: Statistically significant at p-value less than or equal0.05

Table (6): Distribution of the studied patients according to their sleep quality.

The Pittsburgh Sleep Quality Index (PSQI):	Total (n = 100)		Crohn's disease (n = 50)		Ulcerative Colitis (n = 50)		Test of Sig.	p
	No.	%	No.	%	No.	%		
The global score of PSQI								
Good	33	33.0	10	20.0	23	46.0	χ^2=7.644*	0.006*
Poor	67	67.0	40	80.0	27	54.0		
Min. – Max.	0.0 – 21.0		0.0 – 21.0		0.0 – 21.0			
Mean ± SD.	9.68 ± 5.80		11.04 ± 6.19		8.32 ± 5.10		U=903.0*	0.016*
Median	8.0		11.0		7.0			
Subjective Sleep quality								
Very good	17	17.0	4	8.0	13	26.0		
Fairly good	38	38.0	16	32.0	22	44.0	χ^2=10.884*	0.012*
Fairly bad	29	29.0	20	40.0	9	18.0		
Very bad	16	16.0	10	20.0	6	12.0		
Sleep latency								
0	18	18.0	6	12.0	12	24.0		
1-2	35	35.0	21	42.0	14	28.0	χ^2=8.269*	0.041*
3-4	22	22.0	7	14.0	15	30.0		
5-6	25	25.0	16	32.0	9	18.0		
Sleep duration								
>7 hrs	11	11.0	3	6.0	8	16.0		
6 - 7 hrs	31	31.0	11	22.0	20	40.0	χ^2=16.753*	0.001*
5 - 6 hrs	39	39.0	19	38.0	20	40.0		
<5 hrs	19	19.0	17	34.0	2	4.0		
Habitual sleep efficiency								
> 85 %	14	14.0	7	14.0	7	14.0		
75 – 84 %	46	46.0	17	34.0	29	58.0	χ^2=7.822*	0.048*
65 – 74 %	21	21.0	12	24.0	9	18.0		
< 65 %	19	19.0	14	28.0	5	10.0		
Sleep disturbances								
0	15	15.0	8	16.0	7	14.0		
1-9	34	34.0	11	22.0	23	46.0	χ^2=9.880*	0.020*
10-18	26	26.0	19	38.0	7	14.0		
19-27	25	25.0	12	24.0	13	26.0		
Sleeping medications								
Not during the past month	61	61.0	27	54.0	34	68.0		
Less than once a week	20	20.0	11	22.0	9	18.0	χ^2=2.321	MCp= 0.543
Once or twice a week	8	8.0	5	10.0	3	6.0		
Three or more times a week	11	11.0	7	14.0	4	8.0		
Day time dysfunctions								
0	18	18.0	8	16.0	10	20.0		
1-2	48	48.0	23	46.0	25	50.0	χ^2=11.947*	0.008*
3-4	21	21.0	7	14.0	14	28.0		
5-6	13	13.0	12	24.0	1	2.0		

χ^2: **Chi-square test**   MC: **Monte Carlo**
U: Mann Whitney test   p: p-value for contrasting between the studied groups
*: Statistically significant at p-value less than or equal to 0.05
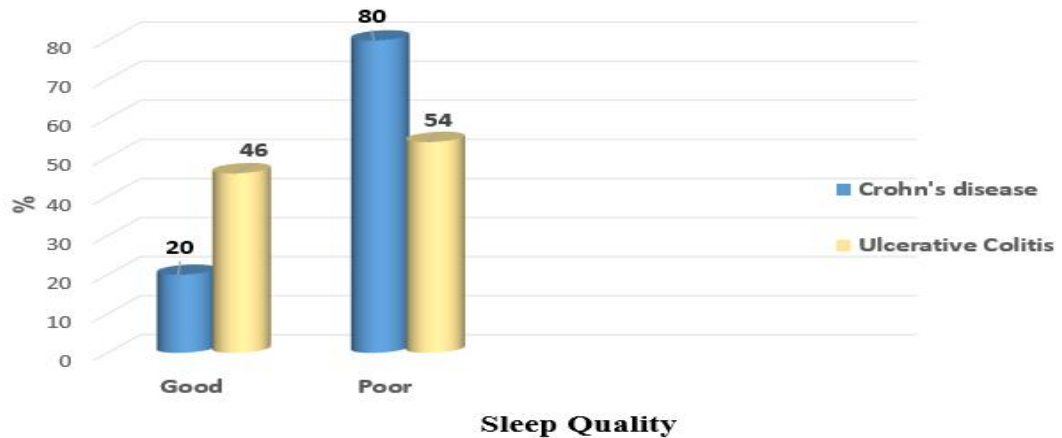
Figure (3): Distribution of the Studied patients according to their sleep quality (no =100)

Table (7): Relationship between cynical distrust and both alexithymia, and quality of sleep among studied patients with inflammatory bowel diseases

	Cynical distrust scale											
	Crohn's disease (n = 50)						Ulcerative Colitis (n = 50)					
	Low (n=17)		Moderate (n=11)		High (n=22)		Low (n=14)		Moderate (n=28)		High (n=8)	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Overall Toronto												
Non-alexithymia	1	5.9	1	9.1	0	0.0	8	57.1	9	32.1	0	0.0
Possible alexithymia	10	58.8	4	36.4	3	13.6	4	28.6	16	57.1	1	12.5
Alexithymia	6	35.3	6	54.5	19	86.4	2	14.3	3	10.7	7	87.5
χ^2 (^{MC}p)	11.942*(0.007*)						19.490*(<0.001*)					
The global score of PSQI												
Good	6	35.3	3	27.3	1	4.5	13	92.9	9	32.1	1	12.5
Poor	11	64.7	8	72.7	21	95.5	1	7.1	19	67.9	7	87.5
χ^2 (^{MC}p)	6.444*(0.035*)						18.665*(<0.001*)					

χ^2: **Chi-square test**   MC: **Monte Carlo**
 *: Statistically significant at p-value less than or equal to 0.05

Table (8): Relationship between alexithymia and quality of sleep among studied patients with inflammatory bowel diseases

	Overall Toronto											
	Crohn's disease (n = 50)						Ulcerative Colitis (n = 50)					
	Non-alexithymia (n=2)		Possible alexithymia (n=17)		Alexithymia (n=31)		Non-alexithymia (n=17)		Possible alexithymia (n=21)		Alexithymia (n=12)	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
The global score of PSQI												
Good	1	50.0	4	23.5	5	16.1	11	64.7	10	47.6	2	16.7
Poor	1	50.0	13	76.5	26	83.9	6	35.3	11	52.4	10	83.3
χ^2 (^{MC}p)	2.024 (0.350)						6.574*(0.037*)					

χ^2: **Chi-square test**   MC: **Monte Carlo**
*: Statistically significant at p-value less than or equal to 0.05

Discussion

Increasing interest exists in relation to the importance of psychological references and features in shielding or exposing individuals to physical diseases. Clinical psychological aspects may have an detrimental effect on a patient's ability to manage chronic diseases, resulting in decreased compliance and adherence as well as predicting morbidity and mortality in the absence of other factors **(Conversano, 2019)**. On the other hand, medical conditions can affect mental health, causing poor perceived quality of life and more difficult management **(Lenzo, Sardella, Martino, & Quattropani, 2020)**. Among chronic illnesses, psychological factors associated with inflammatory bowel diseases (IBDs) significantly impact both the pathogenesis and relapses of these diseases **(Martino, et al., 2020)**. Despite the fact that emotional disorders and sleep problems are more common in people with chronic idiopathic inflammatory illnesses than in the general population, there are only a few scientific studies that are concentrating on these things when it comes to people with IBD **(Scott, Flowers, & Rowse, 2020)**.So this study aimed to determine the relationship between cynical distrust, alexithymia, and quality of sleep among patients with inflammatory bowel diseases.

Regarding socio demographic characteristics, the present study showed that around two thirds of the studied patients aged between 16 to less than 45 years, more than half of patients with Crohn's disease were males, while more than half of those with ulcerative colitis were females. More than half of patients were single and had basic education. Current clinical data revealed that more than half of the studied patients had a disease duration from 1 year to less than 5 years. Also, it showed that more than two thirds of patients were diagnosed with the disease after the age of 15 years and never smoked.

This study is in agreement with **(Mahalli & Alharthi, 2017)** who conducted a study entitled "Assessment of health-related quality of life of patients with inflammatory bowel diseases in Eastern Province, Saudi Arabia" who found that most of patients aged between 20 and 30 years , not married, had a disease duration from 1 year to 5 years, diagnosed with the disease after the age of 15 years and nonsmokers.

Chronic triggering of the body's inflammatory system has been associated with an elevation in hostility, violence, and mental disorders **(Castle et al., 2021)**. Cynical hostility (distrust) plays a significant role in inflammatory activity in patients with IBDs **(Bargiota, Sakkas, Hyphantis, & Angeloopulos; Girard, et al., 2016)**. The current study results illustrated that more than a third of patients with Crohn's disease demonstrated a high level of cynical distrust, while more than half of people with ulcerative colitis demonstrated a moderate level of cynical distrust. Compatible with the current study's findings, **(Castle, et al., 2021)** discovered a correlation between inflammatory levels and cynical hostility in patients with inflammatory bowel diseases. This could be related to the chronic course of the disease and long term follow up which negatively affect patients' psychological status and increase their feelings of helplessness and hopelessness. This consequently make the patients feel lonely without support and elevate their level of cynical hostility.

Furthermore, evidences suggest that patients with inflammatory bowel diseases (IBD) who also suffer from emotional difficulties such as alexithymia may develop significant relapses and a poorer course of the disease (IBD) **(Nemakayala & Cash, 2019; Viganò, et al., 2018)**. The current study results revealed that more than half of patients with Crohn's disease had alexithymia compared to nearly one quarter of those with ulcerative colitis. It also showed that patients with Crohn's disease have higher mean scores on their difficulty describing feelings and difficulty identifying feeling subscales than those with ulcerative colitis. As proposed by **(Fournier et al., 2020)**, this may be because that ulcerative colitis and Crohn's

disease have diverse psychophysiological functioning as the digestive manifestations of the disease are less restricted in Crohn's disease and impact the entire gastrointestinal system. Consequently, some patients whose Crohn's disease is located closer to the stomach, may be more sensitive to experience unpleasant symptoms, such as nausea and vomiting which disturbs their ability for emotional expressions **(Neuendorf, Harding, Stello, Hanes, & Wahbeh, 2016)**. Additionally, the greater flexibility of coping strategies in patients with ulcerative colitis might be more helpful for improving their psychological and emotional wellbeing **(Sarid et al., 2018)**.

Consistent with the current results, several studies indicated that patients with inflammatory bowel disease have generally increased alexithymic levels, despite to a different extent in terms of effect size **(Fournier, et al., 2020; Huang, Terrones, Simmons, Kaye, & Strigo, 2016)**. On the contrary, **(Martino, et al., 2020)** indicated that there is no evidence about the presence of alexithymia or any clinically significant impairment of emotional capabilities in patients with inflammatory bowel diseases.

Evidence of the association between alexithymia and poor sleep quality has been documented using both objective and subjective measures of sleep quality **(Murphy, et al., 2018)**. The results of the current study revealed that almost that more than three quarters of the studied patients with Crohn's disease and more than half of patients with ulcerative colitis had poor sleep quality. Sleep and immunity are bidirectionally linked. It has previously been suggested that immune system activation alters sleep, and these sleep disturbances not only impair intestinal functionality but also modulate the immune system and thus impact disease course in patients with IBD **(Besedovsky, Lange, & Haack, 2019; Sobolewska-Włodarczyk et al., 2016)**. Furthermore, poor sleep quality and change in circadian rhythm have many effects on intestinal cell proliferation, motility, and immunity. Disruption of the circadian rhythm leads to damage in the intestinal barrier, detrimental negative changes

in the intestinal microbiota and as a result, to intestinal inflammation **(Chrobak et al., 2018)**. All these factors support the development of IBD. Thus, circadian rhythm disturbance and poor sleep quality may affect both the gastrointestinal system function and contribute to gastrointestinal problems **(Voigt, Forsyth, & Keshavarzian, 2019)**.

Supporting the current results, **(Sobolewska-Wlodarczyk, et al., 2018)** found that poor sleep quality was associated with IBD exacerbations. They also reported that night diarrhea and abdominal discomfort sensations can significantly impair sleep quality in patients with inflammatory bowel diseases. They elaborated that sleep disorders may also occur as a result of adverse effects of the drugs used in the treatment of IBD exacerbation as steroids, mesalazine and aminosalicylic acid **(Sobolewska-Wlodarczyk, et al., 2018)**.

The findings of the present study proved significant relationship between presence of cynical distrust, alexithymia and poor quality of sleep. It was found that more than three quarters of the studied patients either Crohn's disease or ulcerative colitis who had high cynical distrust demonstrated alexithymia and poor sleep quality. In the same line**, (Castle, et al., 2021Castle, et al., 2021)** reported that chronic activation of the body's inflammatory system in IBDs is associated with increases in hostility, aggression, emotional disturbances and sleep quality problems.

Conclusion

Patients with Crohn's disease had high level of cynical distrust compared to those with ulcerative colitis. Alexithymia level was high in patients with Crohn's disease than those with ulcerative colitis. More than half of patients with Crohn's disease ulcerative colitis had poor sleep quality. Statistically significant positive association was found between cynical distrust, alexithymia, and poor sleep quality among patients with inflammatory bowel disorders.

Recommendations:

Sleep disturbances and mental issues are typical complications of inflammatory bowel diseases (IBD) that deserve consideration in routine therapeutic practice. Counseling for adequate sleep and emotional expressiveness can positively impact the phase of the disease. Additionally, assessing and intervening sleep and mood disruptions in patients with inflammatory bowel diseases can aid in optimizing medicinal care and maintaining illness remission, as well as potentially modify disease prognosis. Future study should focus on the causes of hostility, emotional distress, and poor sleep quality, as well as their effect on the risk of morbidity or illness exacerbation.

References

Alimoradi, Z., Majd, N. R., Broström, A., Tsang, H. W., Singh, P., Ohayon, M. M., Pakpour, A. H. (2021). Is alexithymia associated with sleep problems? A systematic review and meta-analysis. Neuroscience & Biobehavioral Reviews .

Ananthakrishnan, A .N., Khalili, H., Konijeti, G. G., Higuchi, L. M., de Silva, P., Fuchs, C. S., Chan, A. T. (2014). Sleep duration affects risk for ulcerative colitis: a prospective cohort study. Clinical Gastroenterology and Hepatology, 12(11), 1879-1886 .

Association, A. P. (2013). DSM-5 diagnostic classification. Diagnostic and statistical manual of mental disorders, 10 .

Backhaus, J., Junghanns, K., Broocks, A., Riemann, D., & Hohagen, F. (2002). Test–retest reliability and validity of the Pittsburgh Sleep Quality Index in primary insomnia. Journal of psychosomatic research, 53(3), 737-740 .

Bagby, R. M., Taylor, G. J., & Parker, J. D. (1994). The twenty-item Toronto Alexithymia Scale—II. Convergent, discriminant, and concurrent validity. Journal of psychosomatic research, 38(1), 33-40 .

Bargiota, S. I., Sakkas, D., Hyphantis, T. N., & Angeloopulos, N. V. (2016). Psychosocial Factors Affecting the Course of Inflammatory Bowel Disease. Education, 12(3.64), 12.42 .

Besedovsky, L., Lange, T., & Haack, M. (2019). The sleep-immune crosstalk in health and disease. Physiological reviews .

Brooks, A. J ,.Norman, P., Peach, E. J., Ryder, A., Scott, A. J., Narula, P., Rowse, G. (2019). Prospective study of psychological morbidity and illness perceptions in young people with inflammatory bowel disease. Journal of Crohn's and Colitis, 13(8), 1003-101 .1

Buysse, D. J., Reynolds III, C. F., Monk, T. H., Berman, S. R., & Kupfer, D. J. (1989). The Pittsburgh Sleep Quality Index: a new instrument for psychiatric practice and research. Psychiatry research, 28(2), 193-213 .

Castle, R., Bushell, W. C., Mills ,P. J., Williams, M. A., Chopra, D., & Rindfleisch, J. A. (2021). Global correlations between chronic inflammation and violent incidents: potential behavioral consequences of inflammatory illnesses across socio-demographic levels. International journal of general medicine, 14, 6677 .

Chrobak, A. A., Nowakowski, J., Zwolińska-Wcisło, M., Cibor, D., Przybylska-Feluś, M., Ochyra, K., Siwek, M. (2018). Associations between chronotype, sleep disturbances and seasonality with fatigue and inflammatory bowel disease symptoms. Chronobiology international, 35(8), 1142-1152 .

Conversano, C. (2019). Common psychological factors in chronic diseases. Frontiers in Psychology, 10, 2727 .

Cook, W. W., & Medley, D. M. (1954). Proposed hostility and pharisaic-virtue scales for the MMPI. Journal of applied psychology, 38(6), 414 .

El Abiddine, F. Z., Dave, H., Aldhafri, S., El-Astal, S., Hemaid, F., & Parker, J. D. (2017). Cross-validation of the 20-item Toronto Alexithymia Scale: Results from an Arabic multicenter study. Personality and Individual Differences, 113, 219-222 .

Fakhoury, M., Negrulj, R., Mooranian, A., & Al-Salami, H. (2014). Inflammatory bowel

disease: clinical aspects and treatments. Journal of inflammation research, 7, 113 .

Faust, A. H., Halpern, L .F., Danoff-Burg, S., & Cross, R. K. (2012). Psychosocial factors contributing to inflammatory bowel disease activity and health-related quality of life. Gastroenterology & hepatology, 8(3), 173 .

Fournier, A., Mondillon, L., Luminet, O., Canini, F., Mathieu, N., Gauchez, A. S., Pellissier, S. (2020). Interoceptive abilities in inflammatory bowel diseases and irritable bowel syndrome. Frontiers in psychiatry, 11, 229 .

Gîlc-Blanariu, G.-E., Ștefnescu, G., Trifan, A. V., Moscalu, M., Dimofte, M.-G ,. Ștefnescu, C., Ciocoiu, M. (2020). Sleep impairment and psychological distress among patients with inflammatory bowel Disease—beyond the obvious. Journal of Clinical Medicine, 9(7), 2304 .

Gingold-Belfer, R., Peled, N., Levy, S., Katz, N., Niv, Y ,.Fass, R., Dickman, R. (2014). Impaired sleep quality in Crohn's disease depends on disease activity. Digestive diseases and sciences, 59(1), 146-151 .

Girard, D., Tardif, J.-C., Boisclair Demarble, J., & D'Antono, B. (2016). Trait hostility and acute inflammatory responses to stress in the laboratory. PloS one, 11(6), e0156329 .

Greenglass, E. R., & Julkunen, J. (1989). Construct validity and sex differences in Cook-Medley hostility. Personality and Individual Differences, 10(2), 209-218 .

Hänsel, A ,.Hong, S., Cámara, R. J., & Von Kaenel, R. (2010). Inflammation as a psychophysiological biomarker in chronic psychosocial stress. Neuroscience & Biobehavioral Reviews, 35(1), 115-121 .

Huang, J. S., Terrones, L., Simmons, A. N., Kaye, W., & Strigo, I .(2016) . Pilot study of functional magnetic resonance imaging responses to somatic pain stimuli in youth with functional and inflammatory gastrointestinal disease. Journal of pediatric gastroenterology and nutrition, 63(5), 500-507 .

Ilias, T., Bungau, S ,.Tit, D. M., Maghiar, D., Hocopan, C., Brata, R., Fratila, O. (2020). Psychosocial profile of the patients with inflammatory bowel disease. Experimental and Therapeutic Medicine, 20(3), 2493-2500 .

Iskandar, H. N., Linan, E. E., Patel, A., Moore, R ,.Lasanajak, Y., Gyawali, C. P., Ciorba, M. A. (2020). Self-reported sleep disturbance in Crohn's disease is not confirmed by objective sleep measures. Scientific reports, 10(1), 1-9 .

Lamb, C. A., Kennedy, N. A., Raine, T., Hendy, P. A., Smith, P .J., Limdi, J. K., Selinger, C. (2019). British Society of Gastroenterology consensus guidelines on the management of inflammatory bowel disease in adults. Gut, 68(Suppl 3), s1-s106 .

Lenzo, V., Sardella, A., Martino, G., & Quattropani, M. C .(2020) . A systematic review of metacognitive beliefs in chronic medical conditions. Frontiers in Psychology, 10, 2875 .

Mahalli, A. A., & Alharthi, H. M. (2017). Assessment of health-related quality of life of patients with inflammatory bowel diseases in Eastern Province, Saudi Arabia. Journal of Infection and Public Health, 10(1), 93-101 .

Martino, G., Caputo, A., Schwarz, P., Bellone, F., Fries, W., Quattropani, M., & Vicario, C. (2020). Alexithymia and inflammatory bowel disease: a systematic review. Frontiers in Psychology, 11, 1763 .

Miller, T. Q., Jenkins, C. D., Kaplan, G. A., & Salonen, J. T. (1995). Are All Hostility Scales Alike? Factor Structure and Covariation Among Measures of Hostility 1. Journal of Applied Social Psychology, 25(13), 1142-1168 .

Murphy, J., Wulff, K., Catmur, C., & Bird, G. (2018). Alexithymic traits, independent of depression and anxiety, are associated with reduced sleep quality. Personality and Individual Differences, 129, 175-178 .

Nemakayala, D. R., & Cash, B. D. (2019). Excluding irritable bowel syndrome in the inflammatory bowel disease patient: how far to go? Current opinion in gastroenterology, 35(1), 58-62 .

Neuendorf, R., Harding, A., Stello, N., Hanes, D., & Wahbeh, H. (2016). Depression and anxiety in patients with inflammatory bowel disease: a systematic review. Journal of psychosomatic research, 87, 70-80 .

Pirinen, T., Kolho, K.-L., Ashorn, M., & Aronen, E. T. (2014). Sleep and emotional and behavioral symptoms in adolescents with inflammatory bowel disease. Sleep disorders, 2014 .

Sarid, O., Slonim-Nevo, V., Schwartz, D., Friger, M., Sergienko, R., Pereg, A., Greenberg, D. (2018). Differing relationship of psycho-social variables with active ulcerative colitis or Crohn's disease. International journal of behavioral medicine, 25(3), 341-350 .

Scott, A. J., Flowers, O., & Rowse, G. (2020). A comparative study of the nature and magnitude of problems sleeping in inflammatory bowel disease (IBD) compared to healthy controls. Psychology, health & medicine, 25(8), 9 .968-58

Sddah, O. (2011). Ulcerative colitis in children and adolescents from the Western Region of Saudi Arabia. Saudi Med J, 32(9), 943-947 .

Sgambato, D., Miranda, A., Ranaldo, R., Federico, A., & Romano, M. (2017). The role of stress in inflammatory bowel diseases. Current pharmaceutical design, 23(27), 3997-4002 .

Shivpuri, S., Gallo, L., Mills, P., Matthews, K., Elder, J., & Talavera, G. (2011). Trait anger, cynical hostility and inflammation in Latinas: variations by anger type? Brain, behavior, and immunity, 25(6), 1256-1263 .

Sobolewska-Wlodarczyk, A., Wlodarczyk, M., Banasik, J., Gasiorowska, A., Wisniewska-Jarosinska, M., & Fichna, J. (2018). Sleep disturbance and disease activity in adult patients with inflammatory bowel diseases. Journal of Physiology and Pharmacology, 69 .(3)

Sobolewska-Włodarczyk, A., Włodarczyk, M., Szemraj, J., Stec-Michalska, K., Fichna, J., & Wiśniewska-Jarosińska, M. (2016). Circadian rhythm abnormalities–association with the course of inflammatory bowel disease. Pharmacological Reports, 68(4), 847-851 .

Sochal, M., Małecka-Panas, E., Gabryelska, A., Talar-Wojnarowska, R., Szmyd, B., Krzywdzińska, M., & Białasiewicz, P. (2020). Determinants of sleep quality in inflammatory bowel diseases. Journal of Clinical Medicine ,(9)9 , 2921.

Sofia, M. A., Lipowska, A. M., Zmeter, N., Perez, E., Kavitt, R., & Rubin, D. T. (2020). Poor sleep quality in Crohn's disease is associated with disease activity and risk for hospitalization or surgery. Inflammatory bowel diseases, 26(8).

Stavrova, O., Ehlebracht, D., & Vohs, K. D. (2020). Victims, perpetrators, or both? The vicious cycle of disrespect and cynical beliefs about human nature. Journal of Experimental Psychology: General, 149(9), 1736 .

Swanson, G. R., Burgess, H .J., & Keshavarzian, A. (2011). Sleep disturbances and inflammatory bowel disease: a potential trigger for disease flare? Expert review of clinical immunology, 7(1), 29-36 .

Van Assche, G., Dignass, A., Panes, J., Beaugerie, L., Karagiannis, J., Allez, M .,. Louis, E. (2010). The second European evidence-based consensus on the diagnosis and management of Crohn's disease: definitions and diagnosis. Journal of Crohn's and Colitis, 4(1), 7-27 .

Viganò, C. A., Beltrami, M. M., Bosi, M. F., Zanello, R., Valtorta, M., & Maconi, G. (2018). Alexithymia and psychopathology in patients suffering from inflammatory bowel disease: arising differences and correlations to tailoring therapeutic strategies. Frontiers in psychiatry, 9, 324 .

Voigt, R. M., Forsyth, C. B & ,.Keshavarzian, A. (2019). Circadian rhythms: a regulator of gastrointestinal health and dysfunction. Expert review of gastroenterology & hepatology, 13(5), 411-424 .