

Research Article

Coping with the Burden of Irritable Bowel Syndrome by Emotional Suppression – A Cross-sectional Observational Pilot Study

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Abstract

Background: Psychological distress like depression, anxiety, and anger are common comorbidities of irritable bowel syndrome (IBS).

Aim: This clinical pilot study aimed to investigate if patients employ emotional suppression to cope with the psychological burden associated with IBS.

Methods: Emotional suppression was measured with the Courtauld Emotional Control Scale (CECS) in non-IBS and IBS patients. IBS diagnosis was performed using the IBS questionnaire for Health Care Providers of the World Gastroenterology Organisation, and the severity of IBS symptoms was assessed with the IBS Severity of Symptoms Scale.

Results: Patients with moderate to severe IBS showed significantly higher emotional suppression compared to non-IBS patients. Scores (median, interquartile range (IQR)) of the general coefficient of emotional control were 52.0 (IQR 48-56) versus 45.0 (IQR 43-48), for depression 19.0 (IQR 17-21) versus 15.5 (IQR 15-17), for anxiety 17.0 (IQR 15-18) versus 15.0 (IQR 14-16), and for anger 16.0 (IQR 15-19) versus 14.5 (IQR 13-16) for IBS and non-IBS patients, respectively.

Conclusion: IBS patients react with emotional suppression to cope with the psychological stress associated with their disease. Physicians managing IBS patients should be aware of the psychological stressors (depression, anxiety and anger) associated with the disease and that patients exercise emotional suppression to these stressors. Further studies are needed to investigate if emotional suppression has, as found for other diseases and medical situations, negative effects on IBS patients. In addition, clinical studies should investigate if the treatment of gastrointestinal IBS symptoms also affects emotional suppression in IBS patients.

Keywords: Anger; Anxiety; Courtauld Emotional Control Scale; Depression; Emotional suppression; irritable bowel syndrome

Abbreviations

BMI: Body Mass Index; CECS: Courtauld Emotional Control Scale; COVID-19: CORonaVirus Disease of 2019; FGID: Functional Gastrointestinal Disorder; HCP: Health Care Providers; IBS: Irritable Bowel Syndrome; IBS-SSS: Irritable Bowel Syndrome Severity of Symptoms Scale; IQR: Interquartile Range; SD: Standard Deviation; WGO: World Gastroenterology Organisation.

Introduction

Irritable bowel syndrome (IBS) is a common chronic functional gastrointestinal disorder (FGID). Recurrent abdominal pain, bloating, and changes in stool form and frequency are the major symptoms of irritable bowel syndrome [1]. At present, there is no reliable biological marker supporting the diagnosis of IBS. Consequently, the diagnosis is solely based on symptom-based criteria, after excluding organic gastrointestinal diseases [2-4]. The prevalence of IBS in the general

population varies depending on diagnosis criteria and region with an average prevalence rate of 11.2% [5]. IBS is diagnosed more frequently in women than in men and manifests during adolescence [6]. The cause of the disease is still not fully understood and is assumed to be multifactorial, with environmental, inherited, and psychosocial factors contributing. Several potential mechanisms are discussed, among them visceral hypersensitivity, a disturbed function of the gut epithelial barrier, altered gastrointestinal motility, alterations of the enteroendocrine signaling, overactivity of the immune system, dysfunction of the gut-brain axis, and dysbiosis of the gut microbiota [7,8]. While IBS is not fatal, the disease troubles patients because of the unpredictability of symptoms. Patients with IBS experience negative impacts on their quality of life and work productivity [9,10]. IBS has been associated with a high prevalence of psychological disorders. Depression and anxiety are common comorbidities diagnosed in IBS

patients [11–17]. Elevated levels of depression and anxiety compared to those in healthy controls have been found in several studies [18–20]. In about one-fifth of IBS patients depression and anxiety are co-occurring comorbidities [21]. In contrast to depression and anxiety, anger in IBS patients has been less intensively researched but is assumed to be also a regular comorbidity [13,15,22].

There seems to be a bidirectional link (the gut-brain axis) between the gastrointestinal symptoms of IBS and its psychological comorbidities. Clinical studies found that patients with symptoms of depression and anxiety with no comorbid IBS developed gastrointestinal symptoms over time, whereas those with a diagnosis of IBS but no depression or anxiety at baseline developed symptoms of depression or anxiety [23,24]. Interestingly enough, in a majority of patients the gut symptoms precede the development of psychological distress [24]. IBS severity increases significantly with the number of different psychological comorbidities (e.g., depression, anxiety, somatic symptom disorder, perceived stress, and gastrointestinal symptom-specific anxiety) [21,25,26].

So far, little is known about how patients cope with the psychological stress associated with IBS. Many patients consider depression, anxiety or anger as uncomfortable and problematic. For some diseases (e.g., cancer, COVID-19 infections) and medical situations (e.g., learning about a breast cancer diagnosis) it has been found that patients answer to the associated psychological stress (e.g., depression, anxiety and anger) by suppressing (controlling) their emotions [27–29]. Emotional suppression is a semi-conscious or unconscious coping strategy that avoids negative emotions. In general, emotional suppression is considered problematic. Expressing negative emotions is a beneficial practice that is recommended in many forms of psychotherapy, as their long-term suppression may become the basis of many psychosomatic disorders [30,31].

Little is known if IBS patients employ emotional suppression as an avoidance-coping strategy for the psychological stress associated with their disease. To our knowledge there is only one study with four participants which investigated emotional suppression in IBS patients [32]. In that particular study, emotional suppression was observed in one of the four patients investigated. The Courtauld Emotional Control Scale (CECS) has been established for the assessment of emotional suppression in clinical trials [33]. The CECS scale is a questionnaire with 21 statements measuring suppression of depression, anxiety and anger feelings with three subscales, each comprising seven questions. Combining the results from the three subscales generates a general coefficient of emotional control. The present clinical pilot study used the CECS to compare the level of emotional control in IBS patients with that of non-IBS patients.

Materials and Methods

Study Design

The study was advertised to patients visiting the family doctor's clinic in 62-820 Stawiszyn, Poland. Interested patients were informed about the details of the study by their physicians. Patients willing to participate were asked to sign an informed consent. Those who signed the informed consent were enrolled in the study by their physicians. The study was performed between March and August 2023. Patients were diagnosed with the IBS questionnaire for health care providers

(HCP) developed by the World Gastroenterology Organisation (WGO) [34]. The aim was to enroll 100 patients diagnosed positively for moderate to severe IBS (the IBS group) and 100 patients with a negative IBS diagnosis (the non-IBS group). Neither patients nor physicians were receiving an incentive for their participation in the trial. The study protocol was approved by the Ethics Committee of the Calisia University (project identification code 1/2023). The trial was conducted in accordance with the Declaration of Helsinki. Informed consent was obtained from all subjects involved in the study. This research received no external funding.

Study Participants, Diagnosis of IBS, and Assessment of Severity Of IBS

The study recruited female and male patients aged 18 to 65 years. Patients diagnosed with IBS (IBS questionnaire for HCP scores between 15 to 24 points) were checked whether they met exclusion criteria. Exclusion criteria comprised the use of products containing probiotic bacteria or treatment with antibiotics within the last three months, concurrent severe illness (malignancies, uncontrolled hypertension or diabetes, hepatic, renal, or cardiac dysfunctions, serious neurological disorders, psychosis, respiratory disorders such as asthma or chronic obstructive pulmonary disease, and hyper- or hypothyroidism), chronic bowel disorders other than IBS, including inflammatory bowel disease, gastroenteritis, stomach and duodenal cancer, celiac disease, pregnancy or lactation, diagnosed lactose intolerance, use of motility drugs or dietary fiber supplements within the last two weeks, taking anti-coagulation medication and participating in a clinical trial within the past three months. IBS patients not excluded were then assessed for the severity of their IBS by using the IBS-Severity of Symptoms Scale (IBS-SSS) [2]. Only IBS patients with moderate or severe IBS (IBS-SSS scores ≥ 175) were included in the IBS group. Patients assessed to have IBS questionnaire scores below a score of 15 and not meeting any of the study exclusion criteria were assigned to the non-IBS patient group.

Assessment of Emotional Suppression

Emotional suppression was assessed by employing the Courtauld Emotional Control Scale (CECS) in the version compatible with the Polish adaptation by Juczynski [33,35]. The CECS comprises 21 statements divided into three subscales. Each of the subscales contains seven statements that concern the manner of showing depression, anxiety, and anger. Each subscale statement starts with "When I feel..." followed by either; "unhappy (miserable)", "afraid (worried)", or "angry (very annoyed)". In the depression subscale, this is followed by: (1) "I bottle it up", (2) "I let others see how I feel", (3) "I keep quiet", (4) "I hide my unhappiness", (5) "I smother my feelings", (6) "I refuse to say anything about it", and (7) "I put on a bold face". Statements in the anxiety subscale are: (1) "I tell others all about it", (2) "I let others see how I feel", (3) "I refuse to say anything about it", (4) "I say what I feel", (5) "I bottle it up", (6) "I keep quiet", and (7) "I smother my feelings". The anger subscale comprises the following seven statements: (1) "I keep quiet", (2) "I smother my feelings", (3) "I hide my annoyance", (4) "I bottle it up", (5) "I say what I feel", (6) "I refuse to argue or say anything", and (7) "I avoid making a scene". The CECS is designed to test adults, both healthy ones and patients. The scale serves to measure respondents' control of depression, anxiety, and anger in difficult life situations. By marking the most suitable

answer, respondents assess how often they express emotions in a way provided in the questionnaire on a four-point scale from “almost never” – one point to “almost always” – four points. For each of the subscales, the results are calculated separately. The sum of the results in each subscale ranges from 7-28 points. A general emotional control coefficient is calculated by adding together the scores of the three subscales. The general emotional control coefficient can range from 21 to 84 points. The higher the score, the more suppressed emotions are. The reliability (Cronbach’s alpha) of the Polish version of the CECS is 0.77 for depression control; 0.78 for anxiety control; 0.80 for anger control and 0.87 for the general coefficient of emotional control (CECS) [35].

Statistical Analysis

Data for age, weight, height, body mass index (BMI), and the IBS Questionnaire for HCP of WGO in both groups (non-IBS and IBS group) were tested for normal distribution using the Kolmogorov–Smirnov normality test. To evaluate the associations between gender (female/male) in both groups, the Pearson’s Chi-squared test was performed. The Mann-Whitney U test was used for data that did not follow a normal distribution to compare the medians of the two study groups: the non-IBS group and the IBS patient group. For data that followed a normal distribution, such as BMI between non-IBS and the IBS groups, Student’s t-test was performed. All calculations were performed using Statistica software version 14.1.0.4 (Tibco Software Inc., Palo Alto, CA, USA). The results were considered statistically significant at p -values < 0.05 .

Results

Patient Flow, Study Progress, and Baseline Characteristics of the Non-IBS and IBS Groups

Figure 1 shows the flow of the patients through the trial. A total of 845 patients were assessed for the possibility of participating in the study. Of these, 191 patients declined to participate in the trial. The remaining 654 were evaluated with the IBS questionnaire for HCP of

Table 1: Patient characteristics of non-IBS and IBS groups.

Characteristic	Non-IBS group (n=100)	IBS group (n=99)	p-value
IBS-questionnaire for HCP of WGO (score)	6 (5-8)	25 (24-26)	$< 0.05^a$
Age (years)	24.5 (21-39)	41 (33-49)	$< 0.05^a$
Female/male (number)	50/50	58/41	0.224 ^b
Weight (kg)	77.5 (59.75-89)	67 (61-83)	0.050 ^a
Height (cm)	175 (167-186)	166 (164-182)	$< 0.05^a$
Body Mass Index (kg/m ²)	23.6 \pm 2.5	23.7 \pm 2.0	0.6652 ^c

Data are expressed as mean \pm standard deviation (SD) for normally distributed variables or median (interquartile range) for non-normally distributed data or numbers. ^a Mann-Whitney U test, ^b Pearson’s Chi-squared test, ^c Student’s t-test.

the WGO. A total of 137 patients were diagnosed with IBS. In these patients the IBS severity was assessed with the IBS-SSS. The number of patients that had to be excluded because of meeting exclusion criteria or failing to meet the inclusion criteria of an IBS-SSS score ≥ 175 was 37. The emotional control level was assessed in the remaining 100 IBS patients with the CECS scale. Data of one IBS patient had to be excluded from the final analysis as the patient’s data set turned out to be incomplete. Of the total 517 identified non-IBS patients who agreed to participate in the trial the first 100 who did not meet any of the study exclusion criteria were enrolled in the study. Emotional control levels were assessed in these patients using the CECS scale. For the final analysis data from 100 non-IBS and 99 IBS patients were analyzed. The patient characteristics of non-IBS and IBS patients are shown in Table 1. Statistical analyses revealed no significant differences (p -value ≥ 0.05) between the two groups concerning the ratio between females and males, weight, and body mass index. The difference between the diagnostic scores determined with the IBS questionnaire for HCP of the two groups was statistically significant (p -value < 0.05). There were also statistically significant differences between the two groups in height and age. To account for the age difference, all analyses were also performed for an age-matched non-IBS group created by selecting 40 non-IBS patients with a comparable average age as the IBS-patient group. Analyzing the data of the age-matched non-IBS group revealed no differences compared to analyses performed using the 100 patients non-IBS group (data not shown).

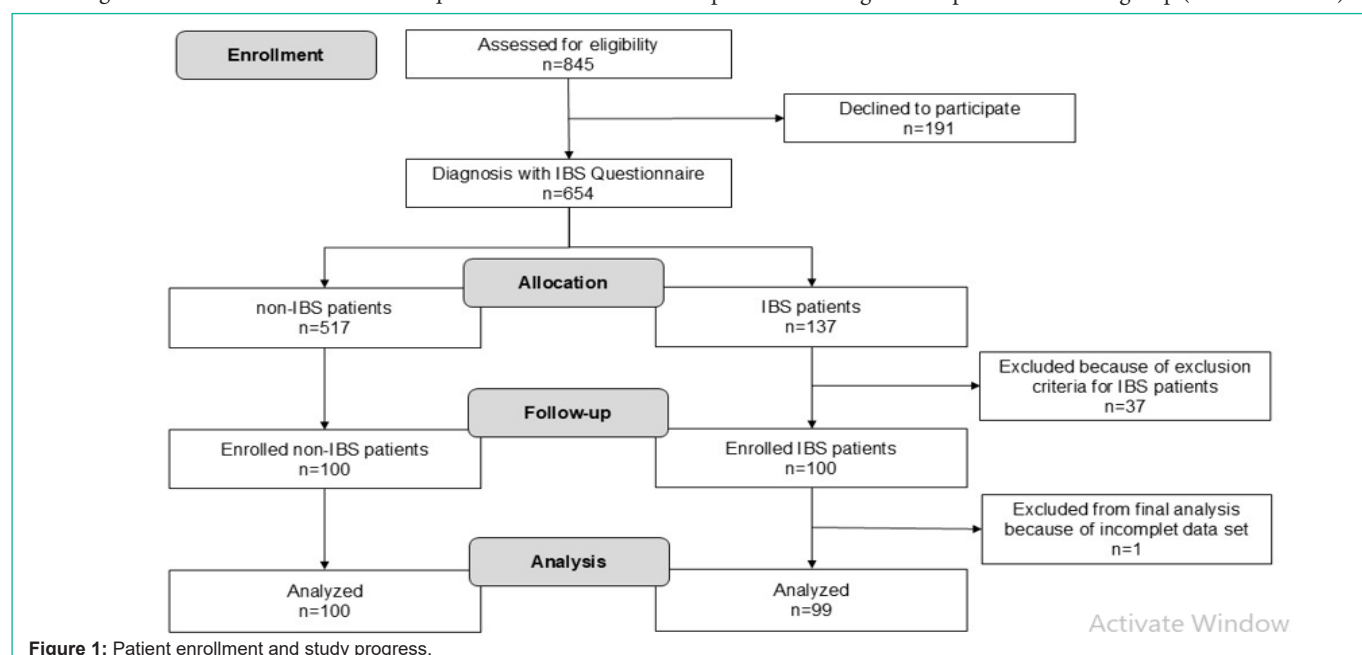


Figure 1: Patient enrollment and study progress.

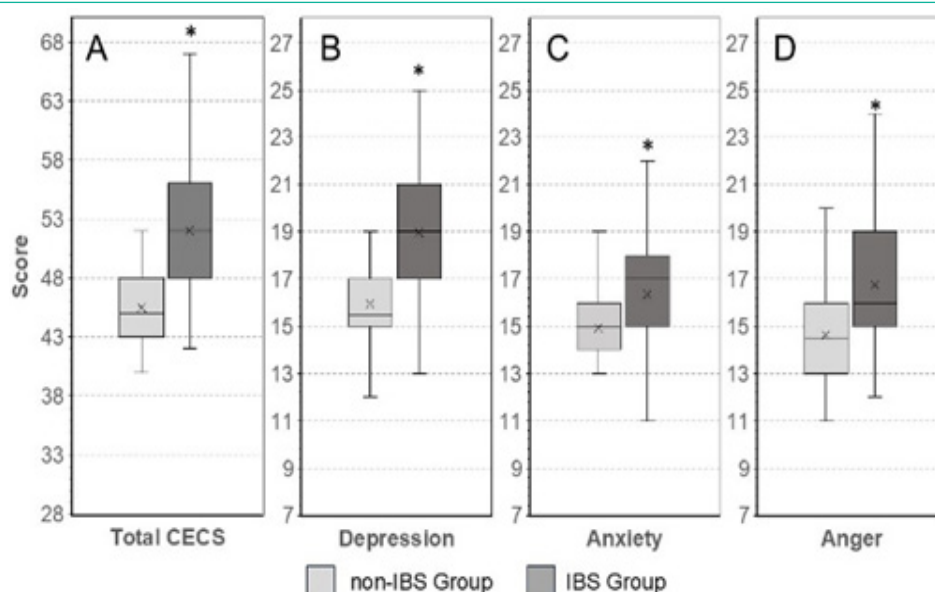


Figure 2: Level of emotional control assessed in non-IBS and IBS patients with the Courtauld Emotional Control Scale (CECS). A: total CECS scores, B: depression subscale scores, C: anxiety subscale scores, D: anger subscale scores. The central line in the box plot represents the median, the boxed areas represent the interquartile ranges. Differences in measurements between the non-IBS and the IBS group were assessed with the Mann-Whitney U test with asterisks indicating statistically significant (p -value < 0.05) differences between the compared measurements.

Emotional Suppressions Scores of Non-IBS and IBS Patients

Results obtained for the general coefficient of emotional control (total CECS) and the individual subscales for depression, anxiety, and anger are shown in Figure 2.

For the non-IBS group, a general coefficient of emotional control of 45.0 (IQR 43-48) was determined. Emotional control of depression was highest (15.5 IQR 15-17), followed by suppression of anxiety (15.0 IQR 14-16) and that of anger (14.5 IQR (13-16)). In the IBS-patient group, the general coefficient of emotional control was significantly higher (52.0 IQR 48-56) than in the non-IBS group. The most suppressed emotion in IBS patients was depression. Compared to that of non-IBS patients (15.5 IQR 15-17), the median depression subscale score of IBS patients (19.0 IQR 17-21) was 22.6% higher. The median anxiety subscale score of the IBS-patient group was 13.3% higher than that of the non-IBS group (17.0 IQR 15-18 versus 15.0 IQR 14-16), while that of the anger subscale was 10.3% higher (16.0 IQR 15-19 versus 14.5 IQR 13-16).

Discussion

IBS is frequently associated with a wide range of neuropsychiatric symptoms, among them those of depression, anxiety and anger. Elevated levels of depression, anxiety and anger in IBS patients compared to healthy controls have been reported in several clinical trials [19,22,36]. Prevalence rates of up to 30% for depression and up to 40% for anxiety have been published [12,37]. The psychological stress adds to the burden of disease experienced by patients suffering from IBS. A recently published systematic review has investigated the strategies used by IBS patients to cope with disease-associated psychological distress [38]. The authors concluded that IBS patients use a wide variety of coping strategies including avoidance behavior as well as proactively addressing the issues at hand. The use of avoidance-oriented coping by IBS patients predicts a poor health

outcome, while the currently available results regarding active-coping strategies were found to be inconclusive. So far, little data has been published regarding the direct measurement of emotional suppression in IBS patients. In a single case design study, it was found that emotional suppression might be an avoidance-oriented coping strategy employed by IBS patients, however, with data from only four patients the evidence is slim [32].

So far, the present study is the largest controlled clinical observational trial measuring levels of emotional control in IBS patients. The results obtained with the Courtauld Emotional Control Scale revealed a significantly higher general emotional control level in IBS patients when compared with non-IBS patients. This shows that, similar to other illnesses, IBS is a condition where affected patients tend to use emotional suppression in response to the psychological stress associated with the disease. In most situations, suppressing emotions is considered to have negative implications for patients [30,31]. If this is also the case for IBS patients will require further research.

CECS subscale data showed that emotional suppression of depression was stronger than that for anxiety and anger in IBS patients. There is clinical evidence that antidepressants, especially tricyclic antidepressants, improve IBS symptoms at least in IBS patients with diarrhea-predominant IBS [39,40]. This opens, at least theoretically, the possibility that the observed suppression of depression might have a positive effect on IBS patients.

Strength of the Study

The strength of the presented trial is its design as a controlled study recruiting IBS patients diagnosed and assessed with a series of well-established and validated tools (IBS questionnaire for HPC of the WGO; IBS-SSS and CECS). The present study is the largest assessing emotional control in IBS patients. The number of patients participating in the study was large enough to determine statistically

significant differences between the IBS patient group and the non-IBS study participants.

Limitations of the Study

The present study used a pragmatic approach, with little involvement of physicians and voluntary participation from patients. This approach comes with several limitations. Assessing depression, anxiety, and anger with established and validated scales would have added tremendously to the value of the trial, however, has this to be reserved for a later trial.

The most important limitation of the present study is the selection of patients for the non-IBS group. Patients for the trial's control group were selected based on a "non-IBS" diagnosis. While the study exclusion criteria avoided the enrollment of patients with some diseases, it cannot be ruled out that at least some of the patients of the non-IBS group might suffer from other diseases. These diseases might be associated with some degree of personal emotional distress (depression, anxiety, or anger). Therefore, the emotional control levels determined for at least some of the non-IBS group trial participants might be (at least to a certain degree) elevated compared to patients free of somatic or psychological illnesses. Interestingly enough, the total CECS score determined for non-IBS trial participants in the present trial (45.0 ± 5.0) was comparable to that (47.1 ± 5.0) found for a large ($n=362$) group of healthy controls in a trial published in 2015 [28]. Another limitation of the study is that the measurement was done only at one point in time and any fluctuation of the level of emotional suppression over time was not investigated. Finally, the present study allows to assess the presence of emotional suppression in IBS patients but it does not determine any causality.

Conclusions

Comorbid psychological disorders add to the burden of IBS patients and increase healthcare costs related to the disease. Modern management of IBS patients should go beyond taking care of patients' gastrointestinal complaints but should also comprise the careful evaluation of the psychological stress associated with this disorder. Treatment of the comorbid psychiatric disorders related to IBS should be at least considered as part of a more holistic approach to the management of IBS patients. More studies are needed to establish a better understanding of the role emotional suppression plays in IBS patients. Further clinical studies will have to assess what kind of impact (negative or positive) emotional suppression has on IBS patients. Future interventional clinical studies should evaluate if the treatment effects of the major gastrointestinal IBS symptoms will also result in changes in emotional control levels in IBS patients.

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