

## A STUDY OF PSYCHOSOCIAL FACTORS IN PATIENTS AND NON-PATIENTS WITH IRRITABLE BOWEL SYNDROME

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### Abstract

It has been seen by gastroenterologists that the irritable bowel syndrome (IBS) is the most common functional gastrointestinal disorder. In this study we used multivariate analysis of the irritable bowel syndrome (IBS) to describe the symptomatic and psychologic features of the condition and their possible contributions to health care accordingly. Symptoms fluctuate, and the overall prevalence rate is relatively steady across the world.

**Keywords:** Diagnosis, digestive symptoms, irritable bowel syndrome (IBS), medical history-taking, questionnaires

### Introduction:

Irritable bowel syndrome (IBS) is a group of symptoms without any evidence of underlying injury, including abdominal pain and changes in the pattern of bowel movements. For a long period of time, many years, these symptoms arise. Depending on whether diarrhea is normal, constipation is normal, both are common, or neither happens very often (IBS-D, IBS-C, IBS-M, or IBS-U, respectively), it has been divided into four key forms [1].

It is not clear about the causes of IBS. Theories include variations of issues with the gut-brain axis, disturbances of gut motility, sensitivity to pain, infections like overgrowth of small intestinal bacteria, neurotransmitters, genetic factors, and food sensitivity. Onset may be triggered by an intestinal infection, or stressful life event. IBS is a gastrointestinal condition that is functional. In the absence of worrisome characteristics, diagnosis is based on symptoms and until all possible problems have been ruled out. Worrisome characteristics include onset at over 50 years of age, weight loss, stool blood, or a history of inflammatory bowel disease in the family. Celiac disease, microscopic colitis, inflammatory bowel disease,

malabsorption of bile acid, and colon cancer are other diseases that can occur similarly [2].

Psychological examination of IBS patients indicates a higher incidence of stress records, irregular personality traits, psychological diagnoses, and disease habits compared to normal subjects or other medical patients. Whether these results are characteristic of anyone with IBS or reflect the subset who see doctors is unclear. If the above were accurate, then these variables could impact the perception of illness and the search for health care, and more successful treatment would involve altering the disease's psychological determinants. Therefore, our aim was to assess whether patient status is correlated with psychological factors in IBS, independent of symptom reports. We contrasted the demographic, symptomatic, and psychosocial characteristics of IBS patients (P), non-patients with IBS (NP), and regular subjects (N) to achieve this [3,6].

### Material and Methods

We studied 72 IBS patients, 82 persons with IBS who had not sought medical treatment, and 84 normal subjects. All participants received full medical examination, abdominal

pain and stool habit diary card examination, and standard psychological assessments of pain, personality, mood, stressful life events, actions of illness, and social support. The participants were at the medical center for 3-5 hours and all the studies were performed on the same day or within a few days of the study visit. Questionnaire on demography and wellbeing. Demographic details, level of education, use of medicine, symptoms of the intestines and other medical history have been collected. Medical appraisal. Board qualified gastroenterologists conducted medical examinations of IBS patients and IBS non-patients to exclude other medical diseases or drugs that could cause bowel symptoms [7]. GASTROENTEROLOGIES Vol. 95, No.3 If a condition was found to potentially lead to their bowel symptoms, the subject was rejected and the data omitted from the study. History and physical examination, sigmoidoscopy, and laboratory tests have been performed (complete blood count, urinalysis, and stool testing of occult blood, polymorphonuclear leukocytes, ova, and parasites). If scientifically suggested, other studies have been obtained (e.g., lactose intolerance testing). Symptoms daily [8]. For a 2-wk duration prior to the study visit, subjects reported stool frequency and consistency and levels of stress and pain (McGill Pain Questionnaire, MPOI daily on diary cards. Pain. Pain. Pain was described by the completion of the MPQ each day by the subjects. The MPQ consists of 20 scales for verbal categories in which the descriptors are rated according to the severity of pain. It is possible to determine four dimensions of the pain experience: I, sensory (e.g., sharp, tugging); II, affective (e.g., tiring, sick); III, evaluative (e.g., annoying); and IV, miscellaneous (e.g., spreading, cool) pain. By summing up the rank values of each verbal descriptor selected by the subjects to describe their pain, a total Pain Rating Index (PRI) was derived. Separate PRI scores for each of the four dimensions of pain perception were also measured [9,10]. A 2-wk total pain score (average daily PRI x the number of days with pain) was measured and used as a covariate in the study because the IBS pain could be intermittent in nature. Individuality. Using the Minnesota Multiphasic Personality Inventory (MMPI), personality factors were evaluated. This structured 555-item self-report scale offers data on characteristics of a reasonably stable personality. There were three scales of validity (L, F, K), nine psychiatric scales (Hypochondriasis, Depression, Paranoia, Psychopathic Deviate, Psychotic, Psych asthenia, Schizophrenia, Hypomania, Social Introversion) and three scales of study (Anxiety, Suppression, Ego Strength) were included. Six dimensions of mood (tension, depression, rage, vigor, exhaustion, confusion) are defined by this standardized 55-item self-administered adjective rating scale. Stressful things in life. The Life Experiences Survey (LES) [11], a 50-item self-report measure in which subjects denote significant life

events they have experienced over the previous 5 months, has been used to determine stressful life events. This test allows the participant to rate selected events as either positive or negative, and to show the effect of that event on their lives by an intensity score. For example, with regard to its effect, an event such as divorce may be selected as positive or negative and scored from 0 to 3. Actions of Sickness. The 52-item Illness Behavior Questionnaire (IBQ) examined subject perceptions, attitudes, and behaviors relating to illness. We analysed six dimensions derived from an IBQ factor analytic analysis: health risks, life-threatening disease disruption, impact inhibition, affective disturbance, declared absence of life issues, and irritability.

**Social support.** Social support was obtained by a questionnaire that evaluated the subject's perceived adequacy of support in a crisis situation (Cohen-Cole SA, personal communication) and a brief standardized measure of family support from the total score on the Apgar family [13].

#### Statistical Analysis

Using the Statistical Analysis Method (SAS Institute, Cary, N.C.) and MANOVA III [14], all data was tested for accuracy, summarized, and analyzed. Statistical significance was set at  $p < 0.05$  unless otherwise stated. Several research techniques were used. Using subject group (P, NP, N), race, and sex as the inter-group variables, multivariate covariance analyses were performed. The test for equality of regression in the analysis was performed routinely. In the study, the test for fair regression was carried out on a regular basis. The first study used the MPQ's PRI scores as the dependent factors. 30 dependent variables from the MMPI, LES, POMS, IBQ, Apgar family, and the perceived adequacy of the social support scale were used in the second study. The variables chosen for the studies were limited to those focused on a priori theories or those of clinical significance. Multivariate analysis of covariance, a method for statistically adjusting variables that cannot experimentally be controlled, was used in our primary analyses. Because chronic pain may influence psychosocial scores (and vice versa), and because patients differ from IBS non patients by self-reports of pain, we co-varied for pain using the total PRI pain score from the 14-day MPQ. Also, when, after the first analysis, we found group differences in stool frequency and educational level, we repeated the multivariate analyses of covariance controlling for these variables, and this did not affect the results. Each independent variable was evaluated by univariate covariance analysis and appropriate pairwise comparisons when a meaningful multivariate F ratio was obtained. Chi-square analysis was used to determine symptom differences between IBS patients and nonpatients and to determine differences

among groups for MMPI T scores that were >70. The Bonferroni procedure was used to correct for multiple comparisons. A matched pair t-test was used to compare stool frequencies from the Demographic and Health Questionnaire with those on the diary card [15].

**Results**

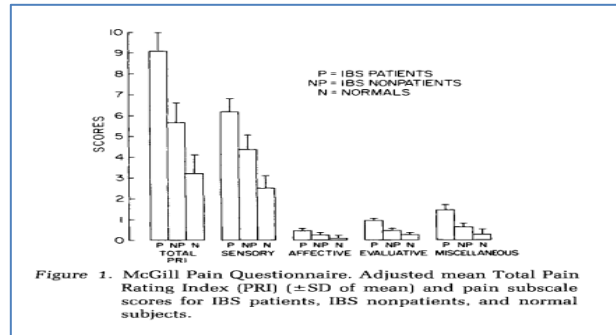
**Demographic Data** A total of 238 subjects were obtained (72 patients, 82 non-patients, 84 regular subjects). There were minor variations in the number of subjects analyzed for each test due to some missing data. All the classes were primarily made up of young white women (Table 1). With respect to sex and ethnicity, there were no group discrepancies, although a statistically significant difference in age ( $p < 0.008$ ) and educational level ( $p < 0.017$ ) was tested for in the studies without altering the findings.

Demographic features	Patients (n = 72) (%)	Nonpatients (n = 82) (%)	Normals (n = 84) (%)
Female	85.9	93.8	87.8
White	83.1	88.8	92.7
Mean age (yr)	30.4	26.1	28.4
Occupational category			
Student	27.9	32.9	36.9
Professional/semiprofessional	26.5	36.6	39.3
Semiskilled/unskilled	32.4	28.0	25.0
Homemaker/unemployed	13.2	2.4	0.0
Education			
Some high school or less	13.2	0.0	0.0
High school graduate/some college	45.6	36.6	29.7
College graduate/graduate school	41.2	63.4	70.2

**Medical Assessment** When identified by gastroenterologists to have other medical diagnoses leading to the bowel symptoms, seven patients (8.8 percent) were removed from the analysis. Inflammatory bowel disease (2 patients), pancreatic insufficiency, dump syndrome, lactose intolerance, intermittent occult gastrointestinal bleeding, and infectious diarrhea is included in these diagnoses. Also, 2 of 84 non-patients with IBS (2.4 percent) were removed due to infection with *Giardia lamblia*.

**Pain** IBS patients reported more pain than IBS non-patients, as expected from previous data (5), and IBS non-patients reported more pain than average. IBS patients 8.17 ( $\pm 0.53$ ), IBS non-patients 3.03 ( $\pm 0.54$ ) and regular subjects 1.13 ( $\pm 0.54$ ,  $P < 0.001$ ) were the mean number of days of abdominal pain obtained by the 2-wk diary card assessment. The McGill Pain Questionnaire (MPQ) has determined the severity and character of the pain. The adjusted mean total PRI was 9.05 ( $\pm 0.89$ ) for IBS patients, 5.64 ( $\pm 0.92$ ) for IBS non patients, and 3.20 ( $\pm 0.92$ ) for normals ( $p < 0.001$ ). Pairwise comparisons of the subscale scores were performed and significant differences were obtained between all groups ( $P > NP$ ,  $p < 0.003$ ;  $P > N$ ,  $p < 0.001$ ;  $NP > N$ ,  $p < 0.04$ ) (Figure 1). On all pain dimensions, IBS patients scored significantly higher than nonpatients and normals: sensory ( $P > NP$ ,  $p < 0.006$ ;  $P > N$ ,  $p < 0.001$ ), affective ( $P > NP$ ,  $p < 0.04$ ;  $P > N$ ,  $p < 0.001$ ), evaluative ( $P >$

$NP$  and  $P > N$ ,  $p < 0.001$ ), and miscellaneous ( $P > NP$ ,  $p < 0.002$ ;  $P > N$ ,  $p < 0.001$ ) pain categories. Non patients with irritable bowel syndrome scored higher than normal subjects on the sensory pain index ( $p < 0.002$ )



**Psychosocial Data** The study of psychosocial evidence suggests that the IBS patient community is distinguished by psychosocial causes that can not be explained by symptom intensity. A multivariate analysis of the 30 psychosocial variables (including MMPI, LES, POMS, IBQ, and Social Support) covariating for pain and stool frequency showed a substantial ( $p < 0.001$ ) main group effect; no interactions were found for group by sex ( $p < 0.34$ ) or group by race ( $p < 0.14$ ). These findings were not influenced by repeating this study covariating for educational status. The psychosocial variables for distinguishing IBS patients from normal subjects ( $p < 0.001$ ) and IBS non-patients ( $p < 0.001$ ) were shown in a pair-wise comparison of classes. The non-patient IBS scores were intermediate between patients and normal subjects, but were not substantially different ( $p < 0.207$ ). Specific outcomes of psychological assessments (Tables 4-6) are discussed below.

MMPI scale	Patients (n = 72) (%)	Non-patients (n = 82) (%)	Normals (n = 84) (%)	p <sup>a</sup>
L	1	0	1	NS
F	9	4	0	NS
K	5	4	4	NS
1. Hypochondriasis	33	5	0	<0.001
2. Depression	21	7	4	<0.001
3. Hysteria	20	9	2	<0.001
4. Psychopathic deviate	23	16	5	NS
6. Paranoid	17	12	5	NS
7. Psychasthenia	23	9	2	<0.001
8. Schizophrenia	25	17	4	<0.001
9. Hypomania	19	16	15	NS
10. Social introversion	11	9	2	NS
A. Anxiety	8	5	1	NS
R. Repression	8	1	0	NS
ES. Ego strength	1	6	7	NS

NS, not significant. <sup>a</sup> Group differences after correction for multiple comparisons ( $p < 0.003$ ) (Reference 16).

**Discussion**

Psychosocial factors in the understanding of IBS are considered significant. The clinical results do not clarify the recorded degree of subjective distress and functional disability for many patients, and psychological examination of IBS patients indicates a high prevalence of self-reported stress, personality disorders, and psychiatric diagnosis [3,6].

Our previous work: shows that these results do not per se apply to bowel disease, but describe the self-selected

population seeking health care with IBS. A multivariate analysis of demographic characteristics, symptom complaints, and psychosocial characteristics among three study groups was conducted to resolve this possibility: IBS patients, IBS non-patients, and normal subjects. We indicated that if a bowel disturbance is linked to psychological disturbances, and normal subjects. We noted that if a bowel condition is associated with psychological conditions, it indicates that these results do not per se contribute to the bowel condition, but characterize the self-selected IBS population seeking health care. We conducted a multivariate review of the demographic characteristics, symptom complaints, and psychosocial characteristics among three study groups to answer this possibility: IBS patients, IBS non-patients, and normal subjects. We indicated that if psychiatric conditions were associated with a bowel condition, they would be comparable and greater than common in IBS patients and non-patients. However, if these traits are due to the status of patients (i.e. health care users), they will be higher for IBS patients relative to both non-patients and regular patients. In order to develop previous methodological designs, we only examined IBS subjects that met positive symptom requirements and standard diagnostic evaluation, prospectively collected diary card symptom reports and, where necessary, used standardized psychological study methods. The data indicate that IBS patients report more pain and have more frequent bowel movements than IBS non patients, and the presence of other symptoms did not significantly add to the regression analysis. This indicates that the most severe IBS symptoms associated with patient status are pain and diarrhea. Provided that there are no physiological indicators of symptom intensity in IBS, we then statistically monitored a multivariate covariance study for symptom reports in psychosocial analyses. The degree of pain and stool frequency recorded across groups is equalized by this statistical technique, thereby controlling for the impact these symptoms may have on psychosocial ratings. The literature shows that IBS patients are still psychosocially distinct from non-patients when treating bowel symptoms ( $p < 0.001$ ) and normals ( $p < 0.001$ ), and IBS non patients exist on a psychosocial continuum between patients and normals, but are more similar to normals ( $p < 0.207$ ). In other words, the psychologic disturbances characterize a subset of people with IBS: those who see physicians. These results lead us to conceptualize a role in the IBS for psychosocial factors. The underlying physiological disorder(s) of IBS is very common (affecting up to 17% of the population), but most people with IBS do not seek health care. It is the presence of psychosocial variables and the degree of altered bowel physiology that influences the perception of disease and activities such as the use of health care. Psychosocial factors may also affect whether a

person with bowel symptoms perceives the condition as a condition that needs medical care, or a "bowel discomfort" that is not deserving of further attention or self-treatment. The consequences are that treatment of the bowel symptoms alone will not be sufficient for many patients to generate clinical improvement; the doctor must also discuss and change the psychosocial factors that may lead to their health care quest [13,15].

### Conclusion

We conclude that IBS patient status is correlated with the psychological factors previously linked to IBS. These variables impact how the disease is perceived and acted upon. Future research can lead to therapies to help modify many of these patients' degree of distress and illness behaviours.

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