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Gender differences in irritable bowel syndrome: The interpersonal connection

Elyse R. Thakur^{1,2}, Michael B. Gurtman³, Laurie Keefer⁴, Darren M. Brenner⁴, Jeffrey M. Lackner⁵, and Representing the IBS Outcome Study Research Group

¹Department of Psychology, Wayne State University, Detroit, MI

²Baylor College of Medicine, Houston, TX

³University of Wisconsin-Parkside, Kenosha, WI, United States

⁴Department of Medicine, Northwestern University Feinberg School of Medicine, Chicago, IL, United States

⁵Department of Medicine, University at Buffalo School of Medicine, SUNY, Buffalo, NY

Abstract

Background—While IBS affects women more often than men, the reasons are unclear. Research on the female preponderance of IBS has focused on gender differences in sex-linked biological processes; much less attention has been paid to the role of psychosocial factors. Interpersonal difficulties may be one source of stress that may significantly impact women with IBS. Because of the importance that women attach to relationships, we suspected they would be more reactive to interpersonal stress.

Methods—283 (M age = 41 yrs., F = 80%), Rome III-diagnosed IBS patients completed a test battery that included the IBS Symptom Severity Scale, McGill Pain Questionnaire, Inventory of Interpersonal Problems (IIP), Interpersonal Support Evaluation List (social support), Negative Interactions Scale, Brief Symptom Inventory (distress), Beck Depression Inventory, Anxiety Sensitivity Inventory, and IBS-Quality of Life as part of baseline assessment of an NIH trial.

Key Results—Males scored higher on 2 IIP scales reflecting a hostile-dominant interpersonal pattern, and reported less social support. The quality of relationship problems (more interpersonal difficulties, lower support) correlated with IBS symptom severity as measured mainly by gastroenterologists.

Corresponding author: Jeffrey M. Lackner, Psy.D., Behavioral Medicine Clinic, Department of Medicine, University at Buffalo School of Medicine, SUNY, EMMC, 462 Grider Street, Buffalo, NY 14215, 716.898.5671(tel); 716.898.3040(fax), lackner@buffalo.edu.

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Conclusions & Inferences—Male, not female, IBS patients reported more interpersonal difficulties. Male patients -- a population for whom little is known -- are characterized by hostile-dominant interpersonal problems. This finding has clinical importance, given that relationship problems may influence MDs' estimation of IBS symptom severity and undermine the physician-patient relationship.

Keywords

gender; interpersonal stress; physician-patient relationship; circumplex

Irritable bowel syndrome (IBS) is a common, potentially disabling, gastrointestinal disorder that affects up to 50 million Americans. Of individuals with IBS, the great majority (60–75%) who seek treatment in Western society are female (1). Women are not only more likely to seek help for IBS but they report a worse clinical picture than men as evidenced by symptoms (2) and their impact on daily lives, paid and unpaid work and family and intimate relationships (3). Why females are more likely to experience and suffer more from IBS symptoms is often attributed to known gender disparities in prevalence rates of functional GI disorders in general (4, 5). Such circular logic begs the question of why more women than men suffer from IBS?

One line of research has focused on sex-linked biological processes (e.g. GI transit, rectal perception, brain activation patterns) that render women physiologically predisposed to developing IBS (5). Despite these efforts, definitive evidence explaining the reasons why IBS affects women more often than men remains elusive (6, 7). Because IBS is a multifactorial problem best understood from a biopsychosocial perspective (8, 9), psychological factors that differentially affect men and women's health may have an important role in explaining the female predominance of IBS. Efforts to distinguish male and females on the basis of their psychological functioning (anxiety, depression, fear of GI symptoms, quality of life) have found more similarities than differences with the differences (anxiety level) being relatively modest and of questionable explanatory value ((2)).

One possibility is that women are either differentially exposed to a greater number (or type) of stressful life events and/or more sensitive to their impact. One source of stress that can intensify the daily burden of females with IBS arises from interpersonal difficulties. Women are more likely to define their sense of self-worth or self-esteem by the quality of intimate interpersonal relationships as compared to men whose self-esteem is more diffusely spread across multiple life domains (intimate and social relationships, work, hobbies). Because of the value women attach to emotional intimacy(10, 11) interpersonal problems have the potential to erode women's sense of self, potentially leading to depression, anxiety, somatic symptoms, and a diminished quality of life(12) all of which are important aspects of the illness experience of IBS patients(13).

If correct, female IBS patients should report worse interpersonal difficulties (lower social support, more interpersonal difficulties, more negative interactions with others) than male IBS patients. To the extent that interpersonal problems are a clinically important aspect part of the IBS experience, we would expect that the quality of interpersonal problems correlate

with negative health outcomes including increased abdominal pain, quality of life impairment, global IBS symptom severity, and emotional distress.

Method

Participants

Participants included 283 consecutively evaluated Rome III diagnosed IBS patients who were assessed at baseline as a part of an NIH trial of behavioral treatments for IBS. Table 1 summarizes the demographic features of participants. Participants were recruited primarily through local media coverage and community advertising and referral by local physicians to tertiary care clinics at two academic medical centers in Buffalo, NY and Chicago, IL. . Individuals who passed a brief telephone screening were scheduled for formal medical and psychological evaluations to determine their standing on eligibility criteria. Inclusion criteria included Rome III IBS diagnosis (14) confirmed during a medical examination by a board certified gastroenterologist; IBS symptoms (ie, pain and defecatory symptoms) of at least moderate severity (occur an average of two or more days per week with life interference, e.g., 15, 16); ability to provide written consent; and a minimum 6th grade reading level. Exclusion criteria were: presence of a comorbid organic GI disease (e.g., IBD) that would adequately explain GI symptoms; mental retardation; current or past diagnosis of schizophrenia or other psychotic disorders; current diagnosis of unipolar depression with suicidal ideation; current diagnosis of psychoactive substance abuse. Institutional review board approval and written (UB, May 19, 2009; NU, December 19, 2008), signed consent were obtained before the study began. This study was completed in full compliance with the Declaration of Helsinki.

Procedure

After a brief telephone interview to determine whether participants were likely to meet basic inclusion criteria, participants were scheduled for a medical examination by one of three male gastroenterologists to confirm a diagnosis of IBS(17) and psychometric testing, which for the purposes of this study included measures described below.

Measures

IBS Symptom Severity—Patient reported severity of IBS symptoms was measured using the Irritable Bowel Syndrome Symptom Severity (IBS-SSS) (18). The IBS-SSS is a 5-item instrument that gauges global symptom severity on the basis of patient ratings of abdominal pain, frequency of abdominal pain, severity of abdominal distension, dissatisfaction with bowel habits, and interference with quality of life. Each item uses a 100-point scale that when summed yields a total symptom severity score ranging from 0 to 500. MD-reported IBS symptom severity was based on the IBS version of the Clinical Global Severity Scale (19, 20), a seven point rating scale that ranges from 1 (normal) to 7 (among the most severely ill).

Pain Intensity—Pain was measured using the Short-Form McGill Pain Questionnaire (SF-MPQ (21)). Patients rate the intensity of these descriptors on a 4-point scale where 0 = none,

1 = mild, 2 = moderate, 3 = severe. Psychometric studies(21) have found strong correlations between the major indices of the SF-MPQ and the original version(22).

Interpersonal Problems—The 32-item version of the Inventory of Interpersonal Problems (23) was used to measure interpersonal problems. The IIP is divided into two sections. The first 20 items begin with the phrase “it is hard for me to” (interpersonal deficits), and the remaining 12 items describe “things that you do too much” (interpersonal excesses). Participants rate how distressing each problem is for them on a five-point Likert-type scaling ranging from 0(not at all) to 4(extremely). The IIP yields eight subscales: Domineering/Controlling (“I try to control other people too much”), Vindictive/Self-Centered (“It is hard for me to put somebody else’s needs before my own”), Cold/Distant(“It is hard for me to feel close to other people”), Socially Inhibited (“It is hard for me to ask other people to get together socially with me”, Nonassertive (“It is hard for me to tell a person to stop bothering me”), Overly Accommodating(“I let other people take advantage of me too much”), Self-Sacrificing (“I try to please other people too much”), and Intrusive/Needy (“I want to be noticed too much”). The IIP-32 has good psychometric properties (23). The range of interpersonal behaviors the IIP captures can be arranged around the circumference of a circle or circumplex defined by two major axes that describe fundamental aspects of most social interactions ((24) (25)). The vertical axis encompasses dominant versus submissive behavior. The horizontal axis encompasses friendly versus hostile behaviors. From these two dimensions, the circle can be broken down into 4 basic categories that include friendly dominant, friendly submissive, hostile dominant, and hostile submissive behaviors. This configuration and the corresponding interpersonal behaviors that fall within each quadrant are presented in Figure 1 and Table 2, respectively.

Social Support—The positive quality of social relationships was measured with the short form of the Interpersonal Support Evaluation List (26). The ISEL consists of a list of 12 statements concerning the perceived availability of social support. A total score of all items (after reverse coding 6 items) yields an index of the patient’s general perception of social support. Items are rated on a four-point scale with anchors ranging from “definitely true” to “definitely false.”

Negative interactions—The negative quality of social relationships was measured with the five item Negative Interactions Scale (NIS) that assesses social interactions characterized by conflict, excessive demands and/or criticism (27, 28). The frequency of negative social exchanges with a spouse, family members, friends, neighbors, and in-laws are rated on a five point scale ranging from 1 = never to 4 = very often. Additional information concerning the NIS can be found elsewhere (29).

Psychological Distress—Overall psychological distress was assessed using the 18 item version of the Brief Symptom Inventory (30). Respondents indicate their level of distress on a five-point scale, 0 (not at all) to 4 (extremely), for three types of problems (i.e., anxiety, somatization, and depression). The average intensity of all items yields a composite index of psychological distress (Global Severity Index, GSI). Internal consistency, test-retest

reliability, and validity of the BSI-18 are well-established (30), and the BSI has been used extensively in IBS research (31).

Anxiety sensitivity—Fear of anxiety and arousal symptoms in general was measured using the Anxiety Sensitivity Inventory (32). This self-report measure reflects fear of anxiety (e.g., “It scares me when I am anxious”), arousal related bodily sensations (“It scares me when my heart beats rapidly”) and their consequences (e.g., “When I notice my heart is beating rapidly, I worry that I might have a heart attack”). The 16 items of the ASI are rated on a six-point scale (0 =very little, 5 = very much) and yield a range of scores ranging from 0 to 64 with higher scores signifying greater fear of anxiety/arousal symptoms.

Depression—The presence and severity of depressive symptoms were measured using the 21-item Beck Depression Inventory-II (BDI-II)(33). The scale includes 21 items rated on a 4-point Likert scale ranging from an intensity of “0” to “3”. Higher scores denote greater severity of depression.

Quality of Life—Quality of life was assessed using the 34-item IBS-QOL measure (34), which is constructed specifically to evaluate quality of life impairment due to IBS symptoms. Each item is scored on a five-point scale (1 = not at all, 5 = a great deal) that represents one of eight dimensions (dysphoria, interference with activity, body image, health worry, food avoidance, social reaction, sexual dysfunction, and relationships). Items are scored to derive an overall total score of IBS related quality of life. To facilitate score interpretation, the summed total score is transformed to a scale ranging from zero (poor quality of life) to 100 (maximum quality of life).

Statistical Analyses

To evaluate mean differences, we conducted a series of independent samples t-tests on the dependent variables (equal variance assumed). Cohen’s d was used to assess effect size, using the square root of the (sample weighted) pooled variance as the denominator. Cohen’s d values of .2 indicate a small effect, .5 a medium effect, and .8 and above a large effect. Multiple regression analyses (as described later) were used to test for possible gender moderator effects. Pearson correlations were calculated to assess associations between interpersonal problems and illness burden. The combined sample was used in the analyses, but gender differences in the respective correlations were then evaluated using z-tests.

Results

Gender Differences on Interpersonal Difficulty Variables

Our main hypotheses concerned gender differences on three interpersonal difficulty variables—interpersonal problems (as measured by the IIP), perceived social support (ISEL), and negative interactions (NIS).

Interpersonal Problems—Interpersonal problems were assessed at two levels—the eight octant or scale scores of the IIP, each related to a particular kind of interpersonal difficulty, and the total score, which cumulates the scale scores and thus is a global measure of

interpersonal distress. Table 3 shows the mean octant scores and total scores by gender, including the significance tests and effect sizes (Cohen's d). As shown, men and women differed significantly on 2 of the 8 octant scales, with men reporting higher levels of Vindictive/Self-Centered and Cold/Distant problems than woman; together these scales reference problems in Hostile-Dominance (35) and occupies the upper left quadrant of the circumplex. This pattern is consistent with observed gender differences in non-clinical samples (e.g., (36)). Effect sizes were in the small range. Men and women did not differ on global interpersonal distress, as measured by the total score.

As a supplementary analysis, we examined gender differences on the individual items of the IIP. As noted earlier, each item of the IIP consists of a specific kind of interpersonal complaint, either in the form of a "hard to do" behavior (e.g., "say 'no' to other people") or an excess (e.g., "try to please other people too much."). Men and women differed significantly on 9 of the 32 items of the IIP. On 8 of the 9 items, men reported higher levels of distress, with most of these items from the two Hostile-Dominant scales. Women reported greater distress on 1 item, belonging to the Overly-Accommodating octant of the IIP.

Social Support—We also compared men and women patients on perceived social support, based on the ISEL list. Contrary to our hypothesis, men reported *less* rather than more social support from others than did women ($M = 37.70$ vs. $M = 40.03$, $t(279) = 2.43$, $p = .02$, $d = .29$).

Negative Interactions—Men and women did not differ significantly on self-reported negative interactions ($M = 9.58$ vs. 10.20 , $t(281) = 1.34$, $p = .18$).

Gender as a Moderator of the Relationship between Interpersonal Difficulties and IBS Symptoms

It is possible that gender moderates the relationship between interpersonal difficulties and the severity of IBS symptoms. More specifically, women may be more sensitive to interpersonal dysfunctions, which then exacerbate IBS symptoms. We tested this in several analyses. Using hierarchical regression, we regressed IBS severity (MD-rated and then self-rated) on (1) interpersonal problems (total score), (2) gender, and (3) the gender $\times$ problems interaction (the standardized cross-product). If gender is a moderator, the interaction term should significantly add to prediction after accounting for the main effects. We repeated the analysis using social support as the predictor and in the interaction term.

The two regression analyses indicated that both (high) patient interpersonal problems ($R = .136$, $p = .023$) and (low) social support ($R = .172$, $p = .004$) predicted greater MD-rated IBS symptom severity. However, gender did not significantly add to the prediction (based on change-to- R^2), nor did the hypothesized interaction of gender $\times$ problems (all p 's $> .40$).

Next we conducted the same analyses, predicting patient-reported severity of IBS symptoms. Unlike for MD-rated severity, neither interpersonal problems ($R = .087$, $p = .146$) nor social support ($R = .072$, $p = .228$) significantly predicted IBS severity. However, gender was a significant predictor of IBS severity (due to females indicating greater severity of symptoms than did males). Controlling for interpersonal problems, the R^2 for gender was .015 ($p = .043$); controlling for support, R^2 was .016 ($p = .035$). In addition, for social support

but not interpersonal problems, the Gender x Social Support interaction was significant ($R^2=.027$, $p=.005$). For males, the correlation between IBS severity and social support was positive ($r=.27$) (i.e., greater support was associated with greater severity of symptoms), but for females the correlation was negative ($r=-.17$), and thus the pattern reversed. While both correlations were significant (with $p's<.05$), the magnitude of the effect was not large.

Association Between Interpersonal Problems and Illness Burden

In addition to interpersonal problems, IBS patients in this project were assessed on a large number of variables related to their psychological and physical functioning. As part of our analysis, we correlated IIP scores with several clinically relevant aspects of IBS experience, specifically, fear of arousal symptoms (ASI), overall psychological distress (BSI), depression (BDI), pain intensity (McGill), social support (ISEL), negative interactions (NIS) and quality of life (IBS-QOL). These are presented in Table 4. In addition to the total score correlations, the table also presents the correlations with the IIP octants of Vindictive/Self-Centered and Overly-Accommodating both of which are associated with the largest gender differences on the IIP (36).

The table reveals the IIP total score--a global measure of interpersonal distress--is highly correlated with other measures of psychological distress. Excluding pain intensity ($r=.19$), correlations ranged in magnitude from $-.34$ (IBS Quality of Life) to $.60$ (BDI). Higher IIP scores are also (and more uniquely) associated with lower social support ($r=-.41$) and a higher levels of negative interactions ($r=.46$). In comparison to the total score correlations, the correlations of the variables with the two octant scales are lower in magnitude, although similar in pattern.

Finally, to examine gender differences in the variables, we performed significance tests on the differences between the IIP total score correlations for men and women patients. None of these differences was significant. However, for tests involving the IIP octant scores, the correlation of Vindictive/Self-Centered with negative interactions was higher for men ($r=.39$) than for women ($r=.06$), $z=2.29$, $p<.05$. Similarly, the correlation with (lower) social support evaluations was greater for men ($r=-.46$) than women ($r=-.19$), $z=2.04$, $p<.05$.

Discussion

This study addressed the issue of why IBS is more common among women by focusing on the quality of social relationships among female and male patients with moderate to severe IBS. We adopted an interpersonal conceptual framework for understanding gender differences for several reasons. First, whereas sex is defined by genetic and anatomical characteristics, gender refers to an identity that emerges from socially constructed roles and relationships and therefore it has an inherently interpersonal component about which little is known. Second, there is mounting evidence that regardless of the biological causes of a chronic disease, attention to the quality of relationships of its sufferers provides a clearer, more comprehensive understanding of that problem and the experience of patients' illness experience (37). A third reason comes from research showing that patients who experience disruptions in interpersonal relationships (e.g., romantic breakup) at the time of an acute bout of gastroenteritis are more likely to develop prolonged symptoms of IBS (38, 39, 40).

Because of the value that women generally attach to interpersonal relationships(41), we predicted that female patients would describe their relationships as more problematic (i.e., reduced social support, more frequent negative interactions with others, and/or higher levels of interpersonal problems). This hypothesis was not supported. Women reported no greater overall interpersonal dysfunction than males. Indeed, when looking at certain problem types and difficulties, we found evidence for the opposite. Men described their relationships as less supportive than females. Additionally, while men reported similar levels of overall interpersonal distress as females, men reported elevated problems in being Vindictive/Self-Centered (“I find it hard to be supportive of another person’s goals in life”) and Cold/Distant (“I find it hard to get along with people”). Interpersonal researchers have broadly termed these kinds of problems as hostile-dominant (e.g., 35, 42); such individuals describe themselves as aggressive, hostile, and suspicious. These behaviors may delay males from seeking medical attention for what may be regarded as a women’s health problem (43) and prevent them from openly discussing it with their gastroenterologist if care is sought.

The finding that IBS men indicated higher levels of hostile-dominant themed problems than did IBS women conflicts with the clinical observations of some IBS researchers. Miller et al. (2004), for example, posited that male IBS patients “seem to lack some of the more dominant male characteristics and on occasions even appear to have some feminine qualities” (44, p. 538). We found no evidence validating this clinical observation based on the predominant interpersonal problems of male IBS patients. Our data are, however, consistent with the broader gender research (e.g., (36, 45) that finds that males, in general, report greater hostile-dominant interpersonal problems than females. Females generally report more friendly-submissive difficulties than do males, including problems in being overly-accommodating to others, deferential, and trying too hard to please others at their own expense.

We found mixed support for the hypothesis that interpersonal dysfunction correspond with the severity of IBS symptoms. IBS symptom severity as measured by physician, in particular, was associated with greater interpersonal problems and lower social support. One explanation is that in an office setting physicians detect negative interpersonal behaviors of their patients that are unwittingly factored into their global estimations of patients’ health status. Because their own interpersonal behaviors are less salient to patients, they are unlikely to influence their health judgments.

The discrepancy between our data and previous gender research with IBS patients underscores the value of conducting gender research with both men and women. Most clinical studies of IBS patients have either excluded males altogether (15, 46) or recruited insufficient number of males into to conduct gender analyses and draw conclusions about differences (19). As a result, our understanding of male IBS patients is with few exceptions (43) extrapolated from what is known on the basis of clinical observation and anecdote about female patients. This practice has perpetuated a notion that male IBS patients lack their own distinguishing features but simply share stereotypical female qualities. Our data challenge this assumption. In many respects, clinical research with FGID patients suffers from a reverse gender bias whereby males, not woman, have been underrepresented in clinical trials (7). The lack of male representation has obvious consequences not the least of

which is a paucity of effective treatments for a non-trivial (~10 million) number of IBS sufferers in the U.S. alone. There is an urgent need for clinical researchers to include an adequate number of males in a manner that at least reflects the proportion to their representation in the general population and provides for analyses of differences for them. These efforts stand not only to enrich our understanding of the male experience (as well as that of females) but also enhance patient engagement, treatment satisfaction, and compliance.

A focus on the interpersonal world of the IBS patient has implications for the clinicians seeking to improve relationships with patients. In the absence of a cure, the patient-physician relationship is regarded as “the most important component of the treatment” for IBS (47). However, the nature of the physician patient relationship is not simply defined by the behavior of the physician or the quality of the alliance (48). It is a joint function of the interpersonal patterns of behavior of both physician and patient—what Kielser (49) describes as the interpersonal transaction (50). According to Kiesler, two individuals interacting with one another negotiate their positions to one another in relation to two basic relationship issues: how hostile or friendly they will be with each other and how much control each will effect in their exchanges. Research suggests that these two dimensions characterize the behaviors that physicians display during medical consultations (48). These processes are mutually interactive and reinforcing.

Understanding the forces that operate in the interpersonal transaction suggest ways for strategizing how to move physicians and patients toward achieving treatment goals. For example, interpersonal theory suggest there is value in that adopting a less dominating and directive interpersonal stands a way of fostering greater patient autonomy (control) over their GI complaints. Physicians should also be aware of how patients’ interpersonal styles influence their own interpersonal stance in the patient-provider relationship. Hostile behaviors pull for hostile responses, and psychotherapy research would suggest that clinician hostility, even when subtly conveyed, can erode the therapeutic relationship and lead to poorer outcomes. The same process may hold true for physician-patient transactions, although empirical validation is still required. Auerbach and Kielser (48) offer a useful primer on how physician-patient relationships and outcomes are potentially affected by these kinds of interpersonal processes, seen through the lens of interpersonal research. Taken together, these interpersonal processes can help clinical gastroenterologists manage more complex IBS patients in routine practice where a sound therapeutic alliance is called for.

These data should be interpreted in light of study limitations. Findings are based on self-report of interpersonal difficulties, which may not necessarily capture the full scope of interpersonal behaviors of patients. While we believe that the interacting dyad of gastroenterologist and patient is of potential clinical importance, our data include only patient data. Because our data are cross-sectional and correlational, we do not intend to suggest that the findings demonstrate causal relationships among study variables. At best, our data can be construed as suggestive of possible causal relationships that could be confirmed through longitudinal methodology. Our data reflected a subset of treatment-seeking individuals willing to enroll in a randomized controlled trial of a behavioral trial for IBS. Therefore, our findings may not necessarily generalize to primary care settings or

community populations (i.e., non-consulters) representative of the majority of individuals with IBS symptoms. It is possible that the relationship between interpersonal problems and physical reported IBS severity is a function of the gender of the physician. We were unable to address because study gastroenterologists were male. Because this study lacked a control group, we do not know whether findings are specific to patients with IBS. While this is one of the few studies that has systematically studied gender differences in a sample of men and women, our sample of males was not big and calls for further research with larger samples. Gender differences are a product of a combination of biological and psychosocial process of which this study had a circumscribed focus. Despite these limitations, our data highlight the interpersonal context as it impacts both brain-gut interactions and patient-physician exchanges of patients with IBS and other FGIDs.

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Abbreviations used in this paper

ASI	Anxiety Sensitivity Inventory
BDI	Beck Depression Inventory
BSI	Brief Symptom Inventory
FGID	functional gastrointestinal disorders
GI	gastrointestinal
GSI	Global Severity Index
IBS	irritable bowel syndrome
IBS-QOL	Irritable Bowel Syndrome Quality of Life
IBS-SSS	Irritable Bowel Syndrome Symptom Severity
IIP-32	Inventory of Interpersonal Problems
ISEL	Interpersonal Support Evaluation List
NIH	National Institutes of Health
NIS	Negative Interaction Scale
SF-MPQ	Short-Form McGill Pain Questionnaire

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Key Messages

- While IBS generally affects women more often than men, reasons for female preponderance are unclear
- Drawing from broader stress research, interpersonal factors may help explain why IBS is more common among females
- 283 IBS patients completed a test battery, which measured symptom severity, pain, quality of social relationships, psychological distress, depression, anxiety sensitivity, and quality of life
- Contrary to predictions, males, not females, reported more interpersonal difficulties (i.e., less support from others and more interpersonal problems involving hostile-dominant behaviors)
- These interpersonal difficulties may influence MD's estimation of IBS symptoms (particularly males) and undermine the quality of the physician-patient relationship

Figure 1.
Conceptual model of interpersonal problems that are broken down into four basic categories

Table 1

Demographics and clinical characteristics (N= 283)

	M(SD)	N%
Age	40.5 (14.5)	
Gender (% Female)		226 (79.9)
Race (% White)		253 (89.4)
Education		
High School or less		70 (24.7)
Associates or College		130 (45.9)
Degree		
Graduate degree		83 (29.3)
Relationship Status		
Married/		114 (40.3)
Divorced		31 (11.0)
Widowed		7 (2.5)
Separated		4 (1.4)
Single		103 (36.4)
Cohabitating		24 (8.5)
Income	72.1K(50.3K)	
Duration of symptoms (yrs)	15.8 (13.2)	
Age of pain onset (yrs)	24.5 (13.6)	
IBS Subtype		
Constipation		79 (27.9)
Diarrhea		123 (43.5)
Mixed		67 (23.7)

IBS, irritable bowel syndrome; M, mean, SD, standard deviation.

Table 2

Interpersonal Problems Characteristic of Each of the Four Quadrants of the Intepersonal Circumplex

Quadrant	Characteristic Interpersonal Problems
Friendly Dominant	Overly revealing, self-disclosing Wants to be noticed too much, admired, approved by others Tries to change others too much
Hostile Dominant	Too aggressive, controlling Manipulates, exploits others too much Criticizes, argues, fights with others too much Hard to feel empathy, support, care for others
Hostile Submissive	Hard to feel close, show affection, express admiration of others Hard to make friends, socialize Hard to join in on groups, introduce self to others Hard to feel self-confident, express one's own needs, be assertive
Friendly Submissive	Hard to be aggressive, express anger, feel superior to others Hard to be firm, set limits, say "no" Too easily persuaded, influenced by others, taken advantage of Too gullible, places others needs ahead of one's own Too affected by other's moods, tries to please others too much

Note: Problems adapted from the Inventory of Interpersonal Problems (IIP-32) (35).

Table 3

Descriptive Statistics for interpersonal problems as a function of gender

IIP Problem	Gender	n	Mean	S.D.	t	df	p	d
Domineering/Controlling	Male	57	3.02	3.03	1.44	281	.15	0.21
	Female	226	2.42	2.70				
Vindictive/ Self-Centered	Male	57	2.86	3.59	2.79	281	.01	0.41
	Female	226	1.63	2.78				
Cold/Distant	Male	57	3.44	2.98	2.44	281	.02	0.36
	Female	226	2.29	3.23				
Socially Inhibited	Male	57	4.72	3.88	1.13	281	.26	0.17
	Female	226	4.03	4.14				
Nonassertive	Male	57	5.68	3.93	-0.78	281	.44	0.12
	Female	226	6.16	4.18				
Overly Accommodating	Male	57	6.14	3.35	-0.67	281	.50	0.10
	Female	226	6.51	3.84				
Self-Sacrificing	Male	57	6.26	3.77	-1.48	281	.14	0.22
	Female	226	7.11	3.87				
Intrusive/ Needy	Male	57	3.79	3.09	-0.37	281	.71	0.06
	Female	226	3.98	3.60				
Total Score	Male	57	35.91	17.40	0.66	281	.51	0.10
	Female	226	34.14	18.25				

Note. IIP, Inventory of Interpersonal Problems.; Numbers that are bolded are significant at $p < .05$.

Table 4

Correlations of interpersonal problems with dependent measures.

Measures	IIP-32 Total Score	IIP-32 Vindictive/Self- Centered	IIP-32 Overly Accommodating
ASI	.40	.23	.22
BSI - GSI	.54	.28	.37
BDI	.60	.27	.46
SF-MPQ	.19	.06	.16
ISEL	-.41	-.27	-.27
NIS	.46	.12	.38
IBS-QOL	-.34	-.12	-.23

Note. IIP-32, Inventory of Interpersonal Problems; ASI, Anxiety Sensitivity Inventory; BSI-GSI, Brief Symptom Inventory - Global Severity Index; BDI, Beck Depression Inventory; SF-MPQ, Short-Form McGill Pain Questionnaire; ISEL, Interpersonal Support Evaluation List; NIS, Negative Interaction Scale; IBS-QOL, IBS-Quality of Life. Numbers that are bolded are significant at $p < .05$.