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## Irritable bowel syndrome: Relations with functional, mental, and somatoform disorders

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dualistic classification of purely organic or purely mental disorders.

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**Key words:** Functional somatic syndrome; Somatoform disorder; Somatic symptom disorder; Bodily distress syndrome; Interface; Irritable bowel syndrome

**Core tip:** Irritable bowel syndrome should be seen as a potentially multidimensional condition, even if cases with an uncomplicated, solely gastrointestinal course occur. Often, patients' general mental and physical functioning, participation, as well as quality of life are also affected.

### Abstract

This review describes the conceptual and clinical relations between irritable bowel syndrome (IBS), other functional, somatoform, and mental disorders, and points to appropriate future conceptualizations. IBS is considered to be a functional somatic syndrome (FSS) with a considerable symptom overlap with other FSSs like chronic fatigue syndrome or fibromyalgia syndrome. IBS patients show an increased prevalence of psychiatric symptoms and disorders, especially depression and anxiety. IBS is largely congruent with the concepts of somatoform and somatic symptom disorders. Roughly 50% of IBS patients complain of gastrointestinal symptoms only and have no psychiatric comorbidity. IBS concepts, treatment approaches, as well as health care structures should acknowledge its variability and multidimensionality by: (1) awareness of additional extraintestinal and psychobehavioral symptoms in patients with IBS; (2) general and collaborative care rather than specialist and separated care; and (3) implementation of "interface disorders" to abandon the

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### INTRODUCTION

About 50% of patients with irritable bowel syndrome (IBS) report additional somatic and mental symptoms once they are asked for<sup>[1,2]</sup>. Often, the additional symptoms call for a supplementary diagnosis of a somatoform disorder, anxiety or depressive disorder, or another functional somatic syndrome. Several reviews show the types and frequencies of IBS comorbidities<sup>[3-10]</sup>; possible pathophysiological and psychophysiological relations such as enhanced pain perception, altered regional brain activation, infectious etiologies, dysregulations in immune and neuroendocrine function, and genetic susceptibility are discussed<sup>[3-10]</sup>. However, a clear concept that binds together

er the various manifestations has not yet been proposed.

## IBS AND OTHER FUNCTIONAL SOMATIC SYNDROMES

In clinical as much as in nonclinical populations, IBS shows a high symptom overlap with other functional somatic syndromes (FSSs). For example: (1) 16% of 270 IBS patients fulfil the criteria for temporomandibular disorder (TMD), and 64% of 25 TMD patients also have IBS<sup>[11,12]</sup>; (2) the frequency of fibromyalgia syndrome (FMS) in IBS patients is reported to be 20%-65%<sup>[4,21]</sup>, and among FMS patients, 25%-81% have an additional IBS<sup>[4,16,21-23]</sup>. The co-occurrence of both syndromes appears to be more common in women than in men<sup>[24]</sup>; and (3) many patients with IBS also suffer from chronic fatigue. According to the literature, 36%-63% of IBS patients have chronic fatigue, 14% have chronic fatigue syndrome (CFS)<sup>[11,25]</sup>, and 35%-92% of CFS patients also have IBS<sup>[3,4,21,26-30]</sup>.

The symptom overlap is never exact; on average, the symptoms of IBS and other FSSs show an overlap of < 50%. A cross-sectional study among almost 4000 twins in the United States showed that patients with IBS have less comorbidity with other FSSs than patients with CFS, low back pain, chronic tension headache, FMS, and TMD<sup>[31]</sup>.

Therefore, neither the so-called “lumpers” nor the “splitters” can so far offer a convincing concept of the relation between IBS and other FSSs<sup>[32]</sup>. Lumpers follow the “single-syndrome hypothesis” that the different FSSs are manifestations of one overarching disease; most likely a somatoform disorder. Splitters, on the other side, prefer the view of FSSs as distinct physical diseases.

## IBS, AND MENTAL SYMPTOMS AND DISORDERS

IBS patients report not only extraintestinal somatic, but also mental symptoms. The latter include predominantly depressive symptoms (including exhaustion, sleeping problems, and loss of appetite) and anxiety (including nervousness, worrying, rumination, and panic attacks). Research on the comorbidity of IBS and mental disorders has been ongoing for approximately 40 years<sup>[33,34]</sup>. Many IBS patients meet the full criteria for the respective mental disorders or suffer from subsyndromal, but nevertheless clinically relevant forms<sup>[35]</sup>.

The total lifetime prevalence for at least one mental disorder in IBS patients is reported to range from 38% to 100%<sup>[36]</sup>. The majority of studies, which do not exclude mental disorders at the outset, report rates of > 90%<sup>[33,34,36-42]</sup>. In particular, the results vary depending on the level of healthcare from 6% to 70% for depressive disorders and from 5% to 50% for anxiety disorders. The prevalence of a panic disorder (with its characteristic episodic vegetative symptoms) among IBS patients is reported to range between 0% and 41%<sup>[36,37,39,40,43,44]</sup>. Most

studies report an increased prevalence of trauma disorders (such as post-traumatic stress disorder) between 8% and 36% among IBS patients<sup>[41,45-47]</sup>. Conversely, patients with panic attacks have an increased risk to suffer from IBS with a prevalence of 17%-47%; patients with depressive disorders suffer from IBS in 17%-59% of cases; and patients with generalized anxiety disorder also fulfil the criteria for IBS in 17%-37% of cases<sup>[48-53]</sup>.

A high comorbidity with depressive, anxiety, and trauma disorders has been shown for all FSSs, but IBS especially appears to be associated with eating disorders: between one-half and two-thirds of patients with a current or former eating disorder also meet the criteria for IBS<sup>[54,55]</sup>.

Summing up, approximately 50% of IBS patients also show clinically relevant symptoms of mental distress.

## SOMATOFORM DISORDERS

According to the current issue of the International Classification of Disease (ICD-10), a somatoform disorder (SFD) can be diagnosed in a patient who has unexplained symptoms (which are persistent and disabling), together with persistent requests for medical investigations (in spite of repeated negative findings and reassurances by doctors that the symptoms have no physical basis). The category of SFDs is not much older than Rome I; it was introduced as a mental disorder in 1980. Like the Rome process, it is also a symptom-based classification that explicitly tries to avoid etiological assumptions<sup>[56]</sup>.

The trait characteristic “somatization” is defined as “a tendency to experience and communicate psychological distress in the form of somatic symptoms and to seek medical help for them”<sup>[57]</sup>. IBS patients score higher on somatization than healthy controls, but lower than patients with somatoform disorders; somatization it is a significant psychological factor directly associated with IBS severity<sup>[58,59]</sup>. With “somatoform autonomous dysfunction of the gastrointestinal system” (F45.32), the ICD-10 classification of somatoform disorders provides a distinct category for patients who have “symptoms as if they were due to a physical disorder of the gastrointestinal system or organ, based upon objective signs of autonomic arousal, and nonspecific or changing in nature” - a definition that is almost automatically met by IBS patients<sup>[60]</sup>. Fifteen to 48% of IBS patients fulfil the criteria for somatization disorder, which is the most severe form of SFDs<sup>[33,34,36,39,40,61,62]</sup>.

In summary, it is again a high percentage of IBS patients who meet the criteria for an SFD. However, a large group of patients does not fit this diagnosis. It is more difficult to give precise numbers because the case definitions of SFDs are vague.

In the new edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) from May 2013, the former category of “somatoform disorders” was renamed and largely revised<sup>[63]</sup>: A “somatic symptom disorder (SSD)” is defined by: (1) one or more somatic

symptoms that are distressing and/or result in significant disruption of daily life; (2) excessive thoughts, feelings, or behaviors related to the somatic symptoms or associated health concerns; and (3) disproportionate and persistent thoughts about the seriousness of one's symptoms, persistently high level of anxiety about health or symptoms, or excessive time and energy devoted to these symptoms or health concerns.

Notably, now there is no demand for a lack of "medical" explanation of symptoms anymore. This means that the concept of a "somatic symptom disorder" describes the common phenomenon that somatic symptoms are combined with psychobehavioral characteristics. The diagnosis can be the primary diagnosis in patients or it can be the secondary diagnosis in patients who have a defined organic illness.

The frequency with which IBS patients fulfill the criteria for SSD has not yet been investigated.

## FUNCTIONAL IMPAIRMENT, DISTRESS, AND PROGNOSIS

Awareness of the psychological dimension of IBS appears to have high clinical relevance. The presence of other bodily symptoms beyond the IBS core symptomatology is associated with higher functional impairment, more psychological distress, and lower quality of life<sup>[1,64]</sup>. Psychiatric comorbidity is associated with more severe gastrointestinal symptoms and contributes to poorer therapeutic outcomes<sup>[44,65,66]</sup>. There is, in fact, evidence that it is rather psychological factors, such as somatization, trait anxiety, maladaptive coping and catastrophizing, than somatic factors that correlate with severity of IBS and poorer outcomes<sup>[44,59,67-69]</sup>.

The severity of IBS core symptoms is not necessarily related to the extent of overlapping bodily symptoms. There are cases of severe IBS with further functional bodily symptoms as well as without those symptoms<sup>[56,67]</sup>.

## TAXONOMIC STRUCTURE OF IBS

The term IBS is considered to be relatively noncontroversial in comparison with many other terminological discussions regarding FSSs. It summarizes several conceptually important aspects: (1) the target organ, where the core symptomatology is centered, is clearly specified as the bowel; (2) the term irritable implies a pathophysiological mechanism, that is irritability, or (hyper-)sensitivity; and (3) the term syndrome describes an association of several clinically recognizable features. These typically occur together, so that the presence of one or more features implies the presence of the other features. The term IBS acknowledges the presence of a general principle (irritability), a specific location (bowel) and variability of the clinical picture.

Studies looking into the taxonomic structure of IBS and other FSSs have found that: (1) several latent variables fitted observations best (including a separate latent

variable for irritable-bowel-like syndromes); and (2) there is one common, higher-order, general factor explaining large parts of the syndrome's variance<sup>[70-73]</sup>. Witthöft *et al*<sup>[73]</sup> promoted a bifactor model of different FSSs. This model consists of a general factor and symptom specific factors. The general factor most likely has a cognitive, affective, or neurobiological component of symptom perception; the symptom-specific factors might reflect physiological factors such as infections, prior organic diseases, or other environmental factors<sup>[73]</sup>. IBS appears to be associated particularly with the factor gastrointestinal symptom and with the factor general symptom distress, but not with other symptom factors<sup>[73]</sup>. Witthöft *et al*<sup>[73]</sup> noted that the absence of a significant association between the other specific symptom factors and IBS did not mean that these symptoms were of no importance. They rather suggested that many symptoms (in this case, those asked for in the PHQ-15) were associated with IBS (*e.g.*, symptoms of pain and fatigue)<sup>[73]</sup>. However, when symptom-specific (*i.e.*, incremental) components of variance were considered (as implied by the bifactor model), only gastrointestinal symptoms predicted IBS over and above the factor general symptom distress<sup>[73]</sup>.

But how can the relation of peripheral and central mechanisms, of sensation and processing, and the influence of affects and cognition be conceptualized?

Rapps *et al*<sup>[74]</sup> suggested that central nervous processes could modulate signals from the periphery. This central modulation of peripheral input could underlie the conscious experience of symptoms<sup>[74]</sup>. However, visceral (and other) pain should not only be seen as pure sensation. Rather, it should be seen as a homeostatic emotion that indicates disturbances in the internal milieu of the body in its interaction with the environment; just like the present level of arousal and anxiety<sup>[75]</sup>. Thus, IBS, other FSSs, and somatoform disorders could be conceptualized as disorders of interoception, that is, disorders of the sense of the physiological condition of the body<sup>[56]</sup>.

## CURRENT AND FUTURE IBS CONCEPTS

The classificatory approach to IBS has evolved over the past 17 years and the Rome process has become a multifaceted enterprise. The Rome process collects high-level scientific evidence on etiology, diagnosis, and treatment<sup>[76]</sup>. This process has recognized the importance of symptoms as a basis for classification, which is independent of assumed etiology and somatization. Reporting multiple extraintestinal bodily symptoms plays an important role in defining the severity of IBS<sup>[77]</sup>. Albeit, the Rome III classification currently requires gastrointestinal symptoms only.

Future conceptualizations have the chance to cover the various manifestations of IBS. For example, the new German IBS guidelines recently introduced an IBS definition that additionally requires psychobehavioral and functional criteria, for example, help-seeking behavior and/or worry, and a significant impairment of quality of

life<sup>[78]</sup>. With this conceptualization, IBS is moved closer to SFDs or SSDs.

It has been suggested that the Rome classification of IBS could define the uncomplicated prototype of complaints (centered around bowel function and abdominal pain), whereas the new DSM-5 diagnosis of SSD could define the complicated prototype (with multiple bodily complaints and certain affective, cognitive and behavioral characteristics)<sup>[56]</sup>. However, this approach tends to ignore the many shades of patients in between, that is, those who have mainly gastrointestinal problems with a few concerns and slightly impaired quality of life; those with several gastrointestinal and one or two extraintestinal complaints; or those with two functional syndromes and mild depression. An overarching category of general (medical-psychiatry) interface disorders could be a helpful conceptualization for the many phenomena that are neither only somatic nor only mental<sup>[32,56,79]</sup>. The ICD-11, awaited in 2015, offers a new chance to do that.

The concept of a bodily distress syndrome (BDS) offers another scientifically coherent common basis for the classification of different dimensional graduations of IBS<sup>[80]</sup>. BDS is divided into a single-organ type and a multi-organ type, depending on the number and location of symptoms. A BDS diagnosis is provided when the symptoms impair the patient's level of functioning and participation (and thus, appropriate need of action is defined). Thereby, the concept differentiates between mere indisposition, or mild, transient symptoms, or clinically relevant illness. In a stratified sample of 978 consecutive patients from neurological and medical departments and from primary care, this concept captured 98% of the IBS cases as BDS, gastrointestinal type<sup>[80]</sup>.

## CLINICAL IMPLICATIONS

Such multidimensional conceptualizations of IBS could clear the way for a stepped, collaborative care for IBS patients, along with several implications for their clinical management<sup>[32,81]</sup>: (1) All mental and bodily symptoms, including those beyond the IBS core symptoms, as well as psychosocial strain, the level of functioning/participation, and quality of life should be asked for early in the course of the illness and regardless of the examiner's subspecialty; (2) The whole range of symptoms and problems should be considered when making a diagnosis. Comorbidity should be documented; (3) The whole range of symptoms and problems should be borne in mind when a treatment plan is established; and (4) When indicated, other specialists should be brought in for both diagnostics and treatment, for example, in the form of rheumatology, infection, or psychosomatic medicine consultations.

## CONCLUSION

There is little doubt that both the following groups exist: (1) patients with IBS who have mild to severe gastrointestinal symptoms without or with only few other bodily

complaints or psychobehavioral features; and (2) patients in whom IBS-like symptoms are part of a broader picture of multiple, changing bodily symptoms accompanied by anxiety, depression, and dysfunctional illness-related affects, cognition, and behavior. There also exists a tendency for those who are involved in the care of these patients to overstretch their preferred approach, that is, to use only the concept of IBS for patients with multiple symptoms, or to use the concept of SFDs or somatization for patients with punched-out functional gastrointestinal symptoms. That is to say that the classification of IBS (and of FSSs in general) is not only a medical, but also a political issue, because a case definition implicates the "right" specialist that is supposed to care for (and to get reimbursed for) the patient - a general practitioner, a gastroenterologist, a psychotherapist, or a psychiatrist, respectively<sup>[56]</sup>.

Overall, now there is less separation between the perspectives of IBS, FSS, and SFDs than there used to be, and we should take advantage of this development. What we need is a far-sighted, balanced, truly psychosomatic approach. We need a high awareness for gastroenterological, but also extraintestinal and psychobehavioral symptoms in patients with IBS. We need gastroenterologists to know about the concepts of SFD/SSD, psychiatrists to know about the symptomatic characteristics of IBS patients, and both of them talking to each other and knowing their limitations. We need more generalist and collaborative care to overcome pure specialist care. We need to abandon our dualistic classification of either organic or mental disorders. A simple definition of patient groups with uncomplicated or complicated IBS depending on bodily and psychological comorbidity, cognition, behavior, and degree of impairment might be a first step<sup>[32]</sup>.

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