

Hypochondriasis: Conceptualization, Treatment, and Relationship to Obsessive-Compulsive Disorder

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Diagnosis and clinical features

According to the *Diagnostic and Statistical Manual of Mental Disorders*, fourth edition, text revised (DSM-IV-TR) [1], the essential feature of hypochondriasis (HC) is a preoccupation with the (inaccurate) belief that one has, or is in danger of developing, a serious medical illness. In many instances, the fear of illness disrupts social, occupational, and family functioning. Moreover, it persists despite appropriate medical evaluation and reassurance of good health. Patients' preoccupation may be symptom based, with a focus on (1) certain specific bodily functions (eg, swollen lymph nodes, vestibular sensations), (2) actual physical abnormalities that are not typically dangerous (eg, a small sore, postural orthostatic tachycardia syndrome), or (3) vague and ambiguous physical sensations (eg, "tired lungs," "foggy brain"). The person ascribes these generally innocuous signs and sensations to a feared malignant disease (eg, cancer, an unexplained heart condition) and becomes highly engrossed with determining their meaning, authenticity, and underlying etiology. The case of Greg illustrates the features of HC:

Greg, a 28-year-old student, was referred to the Mayo Clinic by his primary care doctor for psychological assessment and treatment because of Greg's unrelenting fear that his recent episodes of tachycardia, dizziness, and chest pain meant that he was suffering from a serious heart condition. A comprehensive medical evaluation, including a complete cardiac work-up, revealed

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no evidence of a medical condition that might account for his complaints. Despite these results, Greg was intent on determining the exact nature and cause of his symptoms, believing that a serious undetected medical illness was present.

Fears of and preoccupations with illness in HC are typically accompanied by safety behaviors—activities performed with the aim of reducing fear and protecting one’s personal health. Common safety behaviors in HC include excessive seeking reassurance of good health (eg, through medical tests), checking one’s body (eg, frequent breast self-examinations for cancer), reviewing other sources of information on the feared disease (eg, searching the Internet), and exploring various remedies such as herbal preparations [2]. Phobic avoidance of situations and stimuli perceived to be associated with the feared malady (eg, avoidance of old buildings for fear of asbestos) often occur within HC, as well.

Greg reported a number of safety behaviors that he believed would reduce the risks he associated with his feared condition. First, he had moved from his home in Florida to Rochester, MN to be closer to the Mayo Clinic—the only place he believed that could accurately detect and save him from his “misunderstood” heart problem. He required that his fiancée, Jody, stay with him at all times in case he needed to be transported to the hospital. Because of his fear that physical exertion would strain his “delicate” heart, Greg abstained from many athletic activities he previously enjoyed, including jogging, biking, and playing basketball. He used a portable heart-rate monitor for checking his heart rate and blood pressure to determine whether immediate medical attention was needed. He reported spending hours searching the Internet for information about cardiovascular and other medical diseases that might account for his symptoms.

Individuals who have HC are often reluctant to view their complaints as anything other than physical and therefore often take offense at the suggestion that they seek consultation from mental or behavioral health professionals (eg, psychologists or psychiatrists). Because of this reluctance, they rarely present self-referred to mental health clinics, preferring consultation from primary and specialty medical settings. Additionally, although individuals who have HC may admit to being overly concerned about their feared illness, they are likely to remain dissatisfied until they receive a medical diagnosis. For this reason, many individuals who have HC “shop” for physicians who will provide them with such an answer. The negative implications of this behavior are numerous and include straining the doctor–patient relationship, obtaining multiple health care providers, and undergoing potentially harmful testing procedures when ostensibly healthy.

Greg had been told by various physicians that the “symptoms” he feared were “not serious” and that he “had nothing to worry about.” Greg was not satisfied with these doctors because they were not interested in trying to determine what was causing his symptoms. He believed he was not being

taken seriously enough and that his doctors thought his problems were “all in his head.” When it was initially suggested to Greg that he seek consultation with a psychologist, Greg became angry and felt cast off. He strongly believed that his symptoms were “real,” not imaginary.

Reluctance to seek behavioral health consultation among individuals who have HC renders it difficult to determine its prevalence. Available estimates of the lifetime prevalence rate vary widely and range from 0.8% to 8.5% depending on the setting [3,4]. According to the DSM-IV-TR, HC may begin at any age, but the most common age of onset is thought to be in early adulthood. Symptoms often arise during periods of increased stress but may be more directly influenced by recovery from a serious illness, diagnosis of an illness in a loved one, or the death of a close friend or relative [5]. Exposure to illness-related information in the media also probably influences the onset and focus of HC.

Differential diagnosis

The symptoms of HC are similar to those of several other mental disorders; thus a brief discussion of differential diagnosis is in order. Both HC and panic disorder involve fears related to bodily sensations, and panic attacks can occur in both conditions. Panic attacks and panic disorder, however, are marked by the fear of imminent physical catastrophe (eg, “I am having a heart attack, losing control, dying”) that will occur before help can be obtained. In contrast, the fears in HC often concern more latent threats (eg, “I may have a brain tumor or lung cancer”) that could be treated with the appropriate medical attention. Both HC and generalized anxiety disorder can include worries about illness, but individuals who have generalized anxiety disorder evidence additional areas of worry (eg, relationships, finances, world affairs), and the content of their health-related worries often shifts. In addition, patients who have generalized anxiety disorder tend to ruminate more and engage in less safety-seeking behavior than those who have HC. Finally, as in HC, obsessive-compulsive disorder (OCD) can involve preoccupation with illness and seeking of assurances from medical professionals (ie, checking rituals). Patients who have OCD typically have varied themes of obsessions and compulsions (eg, contamination, scrupulosity, sex), whereas those who have HC are singly obsessed with their health. The potential relationship between HC and OCD in the context of a putative spectrum of OCDs is discussed later.

Conceptual approaches to hypochondriasis

Traditional approaches

There are numerous psychodynamic hypotheses of HC, each proposing that unconscious conflicts underlie the disorder [6]. One model proposes

that hostile and aggressive feelings are transformed subconsciously into physical complaints. Another holds that HC symptoms arise from traumatic or frustrating childhood experiences that are reawakened in adult life by similar stress or frustration. Still other dynamic models propose that HC symptoms represent a defense against guilt or low self-esteem. Although numerous, these psychodynamic theories have not been supported by research, nor has the idea that HC behavior is maintained by interpersonal rewards (ie, “secondary gain” for playing the “sick role”). This last view, although perhaps intuitively appealing, has pejorative connotations and can result in the simple (for the clinician) but disparaging (for the patient) dismissal of the patient’s problems as “made up” or a manifestation of an underlying “personality disorder.” Not only does such a formulation lack empiric support; it overlooks the need for a more careful patient-specific analysis of symptoms, which has proven highly useful in the management of HC.

The cognitive-behavioral approach: hypochondriasis as health anxiety

In contrast to early traditional approaches to understanding HC, the cognitive-behavioral model is an empirically grounded biopsychosocial approach that leads to effective treatment. Within this model, HC is viewed as an excessive and persistent manifestation of anxiety focused upon a perceived threat to one’s own health. In general, anxiety (often termed the “fight-or-flight response”) represents a normal and adaptive response to perceived threat; with the importance and imminence of the perceived threat influencing the intensity of the anxiety. Because most people would consider a threat to their own physical health as vitally important, it is not surprising that health-focused anxiety is a common phenomenon in the population at large [7,8]. In HC, then, the central problem is a chronic pattern of misinterpreting essentially harmless bodily symptoms as suggesting the presence of a malignant disease.

How does HC develop? The cognitive-behavioral model of HC is based on Beck’s cognitive theory of psychopathology, which proposes that emotional disorders are caused by particular sorts of fundamental (“core”) dysfunctional beliefs that people hold about themselves and the world [9]. For example, overly negative beliefs about the self, world, and future (eg, “I am a failure”) underlie depression, whereas core beliefs about social incompetence and negative evaluation (eg, “If people knew the real me, they wouldn’t approve”) underlie social phobia. In HC, the habitual tendency to misinterpret health-relevant information as highly threatening is thought to arise from pan-situational but erroneous assumptions about health and illness (eg, “good health means having no symptoms” or “I am especially vulnerable to illnesses”). Research supports the hypothesis that such dysfunctional assumptions underlie HC symptoms: individuals who have HC have been shown to hold overly narrow concepts of good health, such as the belief that good health means being 100% free of symptoms and

therefore that any symptoms are indicative of serious medical illnesses [10–12]. Such overly rigid or otherwise dysfunctional assumptions probably originate from personal experiences, such as living through a parent's bout with serious illness (eg, multiple myeloma). Such an experience could lead to dysfunctional health-related core beliefs, (eg, "multiple myeloma runs in my family"). As a result, the person feels especially vulnerable and might misinterpret unexpected bodily sensations as indicating the presence of the anticipated malady. Information gleaned from media sources can also increase the probability of misinterpreting benign signs and symptoms. Following extensive media coverage of an outbreak of the bird flu in the fall of 2005, authors evaluated several individuals who had HC who were concerned that their symptoms could be caused by bird flu.

According to the cognitive-behavioral hypothesis, threatening appraisals of essentially benign bodily perturbations is thought to trigger anxiety and worry, as well as urges to escape this affective distress by seeking assurance of good health (ie, safety behaviors). To illustrate, whereas most people would consult a doctor if they experienced chronic headaches over the course of a few weeks that did not respond to aspirin, a person prone to developing HC would assume that any head pain is always a sign of serious illness. Whereas the former assumption leads to appropriate medical consultation or intervention, the latter will evoke apprehension, continuous monitoring of symptoms, and urges to seek medical consultation. Thus, according to the cognitive-behavioral model, HC develops when dysfunctional health-related core beliefs lead to misinterpreting benign physical signs and symptoms as indicating a serious illness. The misinterpretations evoke distress as well as efforts to reduce this distress through safety behaviors, as described previously.

Why does HC persist? When concerned about their health, most people who do not have HC are relieved to be reassured by their doctors that they are in fact healthy, and any rumination about serious illness ceases. Thus, an important phenomenon that any theory of HC must explain is why, despite being told by their doctors that they are not ill, people with HC persist in their misinterpretations of innocuous bodily sensations and remain preoccupied with their health. Several processes that occur in HC interfere with patients' ability to recognize that their health anxiety is unfounded.

Research suggests that the normal physiologic correlates of anxiety and stress probably contribute to the persistence of health-focused anxiety despite lack of evidence of serious illness [13]. When anxiety is evoked (ie, when a threat is anticipated), adrenalin and noradrenalin are released from the adrenal glands, producing a noticeable increase in physiologic arousal (part of the body's normal fight-or-flight response and therefore in reality aimed at protecting the organism). Such bodily sensations can seem ominous if they happen to occur unexpectedly, have rapid onset, or are especially intense. In addition to an increase in heart rate, arousal can

include the following sets of sensations: numbness and tingling from the reduced blood flow to the extremities; feelings of breathlessness (sometimes extending to dryness in the mouth and throat); muscle tension and pain (often head, neck, and chest pain); increased sweating, nausea, and constipation; dizziness, blurred vision, confusion, unreality; hot flashes; and trembling, shaking, or general tiredness. Not surprisingly, individuals who have HC often misinterpret these benign and temporary sensations as indicating the presence of severe illnesses [13,14]. Thus, at the very point that one is becoming anxious or stressed over one's health, additional threatening "symptoms" seem to appear. The result is intensified anxiety, increased arousal, and a vicious cycle leading to urges to seek medical attention for a suspected illness.

Another factor in the persistence of HC is body vigilance—the tendency to monitor and pay excessive attention to one's body for threatening signs and symptoms [15]. Many physicians unintentionally reinforce body vigilance by suggesting that patients monitor their symptoms. Indeed such vigilance is wise if a physical threat is actually present (eg, a diabetic must monitor glucose levels). For individuals who have HC, however, in which actual threats to health are not present, body vigilance results in a learned sensitivity to normal "body noise" (ie, slight perturbations and fluctuations that occur normally within the human body, often serving a homeostatic function). Thus, the opportunities for noticing and misinterpreting possible signs of illness are increased. Additionally, body vigilance can explain why external sources of stress and anxiety are not necessary to evoke episodes of HC. Indeed, many patients argue that their condition is not stress related because they do not feel anxious when they experience body sensations that trigger HC concerns. If such individuals are body vigilant, however, even subtle internal triggers (ie, normal "body noise") can cue HC episodes. Research from the authors' laboratory suggests that body vigilance plays a key role in HC [16,17].

A confirmation bias in which anxious people attempt to confirm their fears also implicated in the maintenance of HC. This attempt to confirm fears is a normal and adaptive response to actual threat. In HC, however, it results in selective attention toward information erroneously considered suggestive of illness and away from accurate information suggestive of good health. Such selective attention biases the impact of information provided by doctors during medical consultations. That is, someone with health concerns who is given a clean bill of health from 10 physicians might discount all of this evidence if one additional doctor even hints otherwise (eg, "I think you're OK, but we might run one more test just to be sure"). Thus, for individuals who have HC, evidence of illness strengthens the belief that one is ill, whereas information that is inconsistent with illness is overlooked as either inadequate or immaterial. This bias explains the urge of patients who have HC to "doctor shop" when told that there is no sign of medical illness.

Finally, safety-seeking behavior serves to preserve HC symptoms and underlying beliefs and (mis)interpretations [7,8,16]. Indeed, any responses that result in avoidance, escape, or reassurance about potential threat are adaptive if the perceived threat is realistic. If the situation poses no real danger, however, safety-seeking behavior prevents the person from noticing that the fear was groundless in the first place. This proclivity is most clear in the case of avoidance behavior. Consider Greg—introduced at the beginning of this article—who avoided physical exertion because of his erroneous beliefs that such activity would exacerbate his heart troubles. By never engaging in such activities, Greg is robbed of the opportunity to correct his mistaken beliefs about his health and find out that he is healthy.

Reassurance seeking can have similar detrimental effects. After receiving assurance of good health, some individuals who have HC experience a temporary reduction in distress. This immediate relief, however, strengthens the urge to use such strategies when doubts related to health arise in the future, explaining the seemingly “compulsive” nature of reassurance seeking in HC. Furthermore, the person comes to view such reassurances as the “only” way of managing health anxiety; for example, “hearing Dr. Smith say I do not have cancer is the only way to get me to stop worrying about it.” This attitude in turn strengthens inaccurate beliefs about illness and about one’s ability to cope (eg, “I couldn’t cope with having a serious illness”). Reassurance seeking can maintain dysfunctional illness-related doubts and beliefs if patients receive inconsistent information from different sources or, worse, inconsistent information from the same source on different occasions.

Body checking, another common safety-seeking behavior in HC, often serves inadvertently to increase patients’ feared bodily sensations. For example, a patient the authors evaluated complained of neck soreness and was concerned that his “inflamed” lymph nodes indicated the presence of cancer (as opposed to a simple infection). This individual habitually manipulated the sides of his neck with his fingers to “check” continually on the suspected inflammation. After a medical evaluation it was concluded that the patient’s lymph nodes were not abnormally swollen, and that the neck soreness was the result of the patient’s constant manipulation. Thus, the frequent body checking augmented the patient’s physical discomfort, which was subsequently misinterpreted as a sign of serious illness.

Many individuals who have HC repeatedly check their own vital signs (eg, heart rate, blood pressure, body temperature, balance) as a way of gaining reassurance of safety. In fact, some invest in expensive devices for accurately measuring such variables. There are two problems with such behavior. First, the more precise the measuring device, the more likely the individual is to notice normal body noise. Indeed, vital processes ordinarily fluctuate as the body maintains itself. Although such shifts in heart rate, blood pressure, temperature, vestibular functioning, and visual acuity (to name a few) are perfectly normal and are not harmful, persons who have HC might misinterpret these fluctuations as highly significant. This misinterpretation gives rise

to health-related concern, increased physiologic arousal, and additional health anxiety. The second, more surreptitious problem is that individuals who have HC are *most* compelled to measure their vital signs during times of emotional distress (ie, to see if something really is wrong). Thus, they tend to “tune in” to their bodies when there is increased, but still normal, bodily noise. One man who was referred to the authors reported measuring his heart rate and blood pressure whenever he felt tachycardic or anxious about his health. He used his findings of elevated heart rate and blood pressure as evidence that he had a serious circulatory disease. Thus, it was no surprise that he strongly believed he had a problem with his heart. This circular reasoning illustrates an important way in which body checking serves to maintain HC symptoms and beliefs.

In summary, according to the cognitive-behavioral framework, HC symptoms persist because of the physiologic, cognitive, and behavioral responses to patients’ erroneously perceived threats to their own health. As discussed later, this conceptual model leads to effective treatment of HC that aims to correct misinterpretations of benign bodily sensations and reduce the use of behaviors that interfere with the natural correction of such misinterpretations.

Assessment and treatment

Assessment

Proper medical evaluation

If not recently completed, the patient should have a comprehensive physical examination and thorough review of medical records to rule out any medical condition that could confound the diagnosis of HC. Information from this examination should be considered as evidence of good health to confirm the diagnosis. Additionally, because severe depression may interfere with response to cognitive-behavioral therapy (CBT), comorbid mood disorders should be assessed, and, if they are present, pharmacologic management should be considered.

Functional assessment

Although structured diagnostic interviews for HC exist, an individualized functional assessment of HC symptoms best reveals the nature of the patient’s problems. The emphasis in functional assessment is on collecting highly detailed patient-specific information about health-anxiety triggers and the types of safety behaviors used in response to these triggers. It involves understanding what the patient considers as evidence of a serious illness and why evidence to the contrary fails to reduce the patient’s health concerns. The assessment should be an open, as opposed to secretive, process, and the clinician should convey a genuine interest in understanding the patient’s discomfort. Because formal rating scales for determining the

severity of HC symptoms have not been developed or psychometrically validated, the authors assess symptom severity using simple 0 (none) to 10 (extreme) ratings of health anxiety and urges to perform safety behaviors.

Pharmacologic treatment

The use of antidepressant medications to treat HC derives from the traditional view that HC exists primarily in the context of depression [18]. Subsequent research, however, indicates that it is not necessary for a person to have depression to have HC or to benefit from antidepressants. Such agents (including tricyclics and selective serotonin reuptake inhibitors) show effects for a variety of emotional disorders, including mood, anxiety, and eating disorders, and thus might be useful in reducing HC symptoms. Several case studies and a small number of outcome studies suggest that the medications in Table 1 can be effective for HC.

Studies indicate that these medications can reduce fear of disease, dysfunctional beliefs, anxiety, somatic complaints, phobic avoidance, and reassurance-seeking behavior [19]. Little is known, however, about the long-term effects of these agents. As in other disorders (eg, OCD), clinical observations and case reports suggest that patients typically relapse if medications are discontinued [20]. Another limitation of medication treatment is that no medication seems to be universally effective. Furthermore, there are reports of HC symptoms worsening during drug treatment because patients become alarmed by side effects such as headaches and stomach distress [19].

A final issue with medications concerns the degree to which the observed effects are caused by specific properties of the medications, as opposed to nonspecific (placebo) factors, such as expectations for improvement. In the only placebo-controlled medication trial for HC, Fallon and colleagues [21] randomly assigned 20 patients to receive either fluoxetine or placebo. After the 12-week medication period, 80% of the fluoxetine group and 60% of the placebo group was classified as responders. The difference in responder rate between groups was not significant. This finding suggests that improvement with medication was largely attributable to placebo effects.

Table 1
Medications with initial empirical support for hypochondriasis

Medication	Recommended dose based on study findings	Studies
Clomipramine	25–225 mg/d	Kamlana & Gray, 1988; Stone, 1993
Imipramine	125–150 mg/d	Lippert, 1986; Wesner & Noyes, 1991
Fluoxetine	20–80 mg/d	Fallon, 1999; Fallon et al, 1991, 1993, 1996
Fluvoxamine	300 mg/d	Fallon, 2001; Fallon et al, 1996
Paroxetine	up to 60 mg/d	Oosterbaan et al, 2001
Nefazodone	200–500 mg/d	Kjernisted et al, 2002

Often physicians have to “talk patients into” using psychotropic medications for HC because these patients refuse to view their symptoms as psychiatric in nature. Some individuals who have HC perceive that prescribing these medications is merely the doctor’s way of “getting rid” of a difficult patient. Consequently, many patients do not follow up with pharmacologic recommendations. To reduce rates of dropout and poor adherence to pharmacotherapy, the authors recommend the patient be given a clear and logical explanation for the use of an antidepressant. Specifically, this rationale should convey that HC involves real body sensations that the patient is responding to in unhelpful ways that can increase the uncomfortable sensations as well as the concern with these sensations. The purpose of the medication, therefore, is to reduce the patient’s sensitivity to these sensations. Potential side effects should be carefully discussed in advance so that their misinterpretation is limited.

Psychological treatment: cognitive-behavioral therapy

Traditionally, the psychological treatments offered to individuals with HC have included psychodynamic psychotherapy aimed at helping the patient identify unconscious motivational factors and supportive therapy focusing on symptom management rather than amelioration. Although no research has formally evaluated the effectiveness of these interventions, the widely accepted view of HC as a treatment-resistant condition speaks to the inability of such interventions to produce long-lasting effects [2]. Moreover, because, as a rule, patients who have HC are reluctant to regard their symptoms as psychologic in nature, they often reject psychotherapy in favor of seeking further medical attention.

In contrast to the “talk therapies,” CBT for HC is a skills-based approach that has been logically derived from the empirically consistent conceptual framework reviewed earlier. Specifically, the conceptual model suggests that patients who have HC experience actual physical sensations that they incorrectly perceive as threatening, leading to anxiety about health and the use of maladaptive strategies for reducing anxiety, which paradoxically complete a vicious cycle. Therefore treatment for HC must (1) help patients recognize and modify faulty beliefs concerning their health, and (2) eliminate safety behaviors and other barriers to the correction of such faulty beliefs [8]. As described later, CBT involves the use of specific procedures empirically demonstrated to weaken maladaptive thinking and behavioral patterns.

Formulation of an idiosyncratic model

A strength of CBT is that it is guided by a patient-specific “blue-print” that is formulated collaboratively with the patient. This blue-print diagrams how the patient’s health anxiety is influenced by erroneous illness-related beliefs and how the physiologic, cognitive, and behavioral processes described

previously maintain such beliefs. Because the typical experience for such patients is to feel discounted by their doctors, a thorough and open consideration of their feelings, thoughts, and behaviors often leads to an acceptance of the conceptual model and the treatment itself [22]. To illustrate, Fig. 1 displays an idiosyncratic model of Greg's HC symptoms. This model was derived from a functional assessment, as discussed previously.

Psychoeducation

Education is an important part of CBT for HC. In light of the cognitive-behavioral conceptualization, patients are helped view their problem as one in which uncomfortable but benign bodily sensations and perturbations have become the focus of excessive concern. This concern evokes certain maladaptive behavioral and physiologic responses that paradoxically serve to increase the health concerns. Patients are taught that anxiety is a normal and adaptive reaction to a perceived threat to one's health which involves behavioral, mental, and physiologic responses aimed at preparing the individual for fight or flight. Time is spent identifying feared bodily sensations, providing physiologic explanations where applicable (eg, vestibular functioning might vary depending on when one last ate), and explaining the detrimental effects of safety behaviors (eg, checking leads to increased preoccupation).

Modifying erroneous beliefs

Cognitive restructuring helps the patient identify evidence for and against faulty beliefs about health and illness [9,23]. The therapist helps the patient

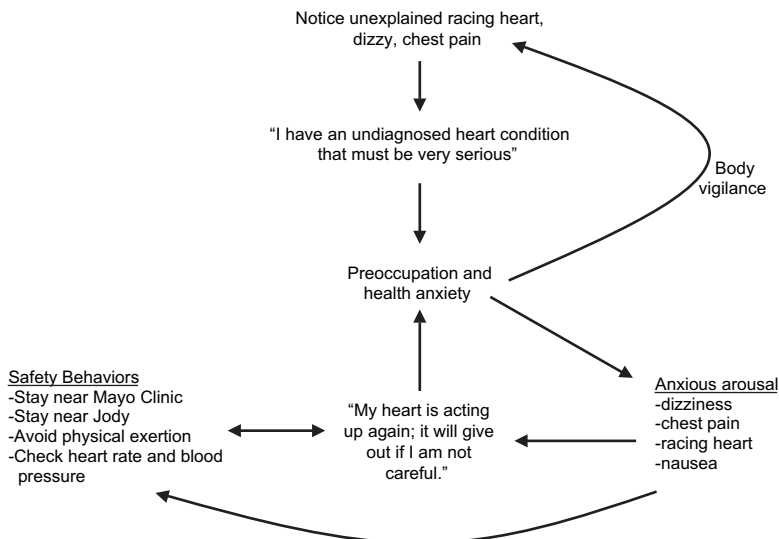


Fig. 1. An idiosyncratic model of health anxiety.

(1) identify the basis for these beliefs; (2) recognize contradictory events or experiences; and (3) understand the significance of contradictory evidence. The goal is to help the patient adopt rational responses to normal physiologic sensations. For example, Greg found that when he sat down and relaxed after being tachycardic, his heart rate slowed, his dizziness went away, and his fear subsided. The therapist helped Greg view this experience in a new light in the following exchange:

THERAPIST: Would a cardiologist treat a serious heart condition just by having the patient sit down and relax?

GREG: Of course not. You need medical interventions to treat heart troubles.

THERAPIST: I agree. So, if trying to relax is not the right treatment, but relaxing makes your heart symptoms go away, and makes you feel better, is there a better explanation for what is happening in light of what you have learned about your physiologic response to threat?

GREG: I never looked at it that way before. Maybe the feelings in my chest are there because of how much I am worried about my heart.

After his faulty cognitions were challenged, Greg learned to interpret his tachycardia and chest pain as normal bodily reactions to stress rather than as symptoms of a serious heart problem.

Exposure and response prevention

Exposure therapy, a CBT technique in which patients practice directly confronting their fears, is the most essential component of effective psychological treatment of anxiety. There are three methods of conducting exposure: (1) *in vivo* exposure, or confronting the actual feared situations and stimuli (eg, hospitals, TV shows about people with cancer), (2) imaginal exposure, or confronting feared thoughts and image, in one's imagination (eg, doubts about illnesses, thoughts of dying), and (3) interoceptive exposure, confronting feared body sensations (eg, dizziness, rapid heart rate). Interoceptive exposures might be produced by having the patient use caffeine, exercise vigorously, or by spinning in an office chair, for example. To benefit from exposure, the patient must be motivated to reduce health anxiety and be willing to tolerate an elevated degree of temporary anxiety. Put another way, exposure requires patients to invest anxiety now for a calmer future. An exposure hierarchy of Greg's feared situations and stimuli was developed collaboratively with the therapist (Table 2). Greg rated the experiences on a Subjective Units of Distress Scale (SUDS) of 1 to 10 in which 1 indicated no anxiety and 10 indicated very severe anxiety. He agreed to confront these situations during subsequent graduated exposure sessions, first beginning with those eliciting moderate symptoms of anxiety (SUDS = 4–5) and gradually building up to his most feared situations (SUDS = 10).

Exposure works for a number of reasons. First, and most importantly, patients realize that the disastrous consequences they fear do not occur

Table 2
Greg's exposure hierarchy

Situation/Stimulus	Type of exposure	Difficulty (0–10)
Dizziness	Interoceptive (spinning)	4
Racing heart	Interoceptive (running in place)	4
Visiting cardiac unit in hospital	In vivo	5
Reading sad stories about people who have heart disease	In vivo	6
Picturing living with a heart condition	Imaginal	7
Not knowing for sure about cardiac health	Imaginal	7
Going to the store without Jody	In vivo	8
Driving alone to a rural area 50 miles from Mayo Clinic	In vivo	10
Staying over night alone and far from Mayo	Imaginal	10

(eg, “If I don’t go to the doctor, my ‘illness’ will go undetected and I will die”). Second, anxiety naturally decreases with prolonged and uninterrupted exposure to a feared situation, a process known as habituation. Patients learn that whether or not they seek reassurance from the doctor or the Internet, their anxiety will remit eventually. Third, patients gain self-efficacy and learn to master their fear without having to rely on avoidance or safety behaviors. For exposure to be successful, the patient must refrain from safety behaviors and other strategies designed to protect from unrealistically feared illnesses (ie, response prevention). Taylor and Asmundson [2] describe the details of implementing these treatment strategies with patients.

Effectiveness of cognitive-behavioral therapy

Despite early doubts about the effectiveness of psychological treatments, there is now clear evidence that HC can be managed using CBT [24]. Three controlled studies demonstrate that fewer than 20 sessions of this treatment can produce clinically significant and lasting improvement. In a wait-list-controlled study, Warwick and colleagues [25] found that CBT significantly decreased the need for reassurance, overall health anxiety, and checking frequency. General anxiety was reduced on average by about 70%, whereas depressive symptoms were reduced by 53%. Moreover, CBT was acceptable to patients: only 6% of patients recruited for this study refused to begin therapy, and only 6% discontinued prematurely. In a subsequent controlled study, a regimen of 16 weekly sessions of CBT was shown to have both short- and long-term (1-year) efficacy in reducing fears of illness as well as unnecessary medical visits [26]. In addition, CBT was more effective than stress management techniques, which also produced improvement. This finding suggests that the specific procedures of CBT (ie, psychoeducation, cognitive restructuring, exposure-response prevention), as opposed to non-specific factors (attention from a therapist, relaxation techniques), are the active ingredients for improvement of HC symptoms. Again, refusal and

dropout rates were low (4%), suggesting acceptability and tolerability. Finally, in a large study ($N = 187$), Barsky and Ahern [27] found that relative to medical care as usual, six group CBT sessions focusing on education and modifying dysfunctional health-related beliefs produced significant decreases in health anxiety, HC-related beliefs, and functional impairment.

Is hypochondriasis a form of obsessive-compulsive disorder?

At various points, authors have considered that HC might be related to OCD [28]. The following discussion presents the basis for this notion and considers the similarities and differences between the two conditions.

OCD is an anxiety disorder characterized by (1) intrusive, unacceptable thoughts, ideas, or images (obsessions) that evoke anxiety and (2) efforts to resist or neutralize obsessional anxiety by engaging in some other thought or action (compulsive rituals). There is a clear phenomenologic link between the occurrence of obsessions and the performance of rituals or neutralizing behaviors. For example, obsessions about germs lead to washing and cleaning rituals. Some writers have proposed that there exists a spectrum of obsessive-compulsive disorders that incorporates numerous conditions with diagnostic criteria of repetitive behaviors, including some neurologic disorders (eg, Tourette's syndrome), impulse-control disorders (eg, trichotillomania), and disorders involving preoccupations with bodily sensations or appearance (eg, HC) [29]. In some sense, these disorders are assumed to have a common underlying etiology [29].

Similarities between OCD and other disorders may be found on two levels. The first, and less compelling, is at the level of symptom form or topography. A great number of mental disorders with repetitive behaviors in their diagnostic criteria fall into this category, including Tourette's syndrome, trichotillomania, and HC. Indeed, tics, hair pulling, and reassurance seeking about one's health are repetitive in much the same way that compulsive rituals in OCD are repetitive. The problem with using the presence of repetitive thinking and behavior to determine the boundaries of an OCD spectrum, however, is that vastly different factors might motivate the repetitive behaviors in OCD and in, for instance, Tourette's syndrome. A strong case has been made that such an approach leads to an illusion of relationships among unrelated disorders because of the high base rates of overlapping features with poor sensitivity and specificity (eg, repetition) [30].

In contrast, examining phenomenology at the functional level provides a more specific and fine-grained approach to understanding the nature of behavior disorders and determining whether a disorder might be related to OCD. To this end, disorders characterized by behaviors that are similarly motivated will be expected to converge. For example, in addition to being repetitive, both safety behaviors in HC and rituals in OCD are performed in response to threat-relevant triggers (eg, they are motivated by unrealistic

threats of illness in HC and unrealistic threats of responsibility for harm in OCD). These behaviors (1) serve the function of preventing some feared outcome, (2) result in the desired reduction in distress and are thereby reinforced, and (3) maintain the perception of threat because of the nonoccurrence of the feared outcome. Thus, HC and OCD are functionally similar. Repetitive behaviors in trichotillomania and in Tourette's syndrome do not share these functional characteristics, however. In fact, research demonstrates that hair pulling is performed in response to boredom (as opposed to threat) and that it results in pleasurable feelings (as opposed to a reduction in anxiety) [31]; tics are performed to satisfy a sensory urge rather than as a means of reducing anxiety [32]. Thus, at a functional level, these disorders are quite dissimilar to OCD.

This functional approach leads to the conclusion that the fundamental nature of HC is similar to that of OCD. Empiric research demonstrates that stimuli that trigger thoughts about illness in patients who have HC evoke anxiety in much the same way that obsessional stimuli do in OCD and that safety behaviors in HC (eg, checking, asking for assurance from doctors) serve the function of reducing health anxiety in HC much as compulsive rituals reduce fears of catastrophes in OCD (Abramowitz JS, Moore EL. An experimental analysis of hypochondriasis, unpublished manuscript). There are important differences between these two disorders, however. In particular, individuals who have HC evidence more fears of bodily sensations and less insight into the senselessness of their fears than do individuals who have OCD. Nevertheless, on the basis of their overlapping functional properties, the authors conclude that HC most likely represents a form of OCD.

Summary

Once considered exclusively as a problem secondary to other mental disorders (ie, mood disorders), HC is now known to occur quite often as a primary diagnosis. A frequent drain on medical resources, patients who have HC can be viewed as suffering essentially from an anxiety disorder in which intense fear is focused on the possibility that they might be seriously physically ill or that such illness is imminent. The processes that contribute to the development and maintenance of such health anxiety consist largely of beliefs, assumptions, and behavioral responses that, although internally consistent with the perception of health-related threat, are erroneous and highly maladaptive in that they prevent the correction of erroneous perceptions of threat. There is growing evidence that this conceptualization leads to effective reduction in HC symptoms through cognitive-behavioral and pharmacologic treatments.

By far the main obstacle to successful treatment of HC is the patient's reluctance to view the problem as anything other than physical. The authors have found, however, that patients appreciate their care providers showing a genuine understanding of their concerns and taking the time to offer

a logical, coherent explanation and rationale for the need for psychological and psychiatric services.

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