

HYPOCHONDRIASIS: DEMOGRAPHIC CHARACTERISTICS AND COMORBIDITY WITH OTHER PSYCHIATRIC DIAGNOSES IN GREECE

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Background: Hypochondriasis is classified as a somatoform disorder. However, some findings indicate that it is differentiated from the other somatoform disorders regarding demographic characteristics and clinical parameters. Hypochondriasis has a high comorbidity both with other clinical syndromes and with personality disorders. The present study aims to investigate: 1) the demographic characteristics of hypochondriasis in comparison to other somatoform disorders, 2) the comorbidity of hypochondriasis with other clinical syndromes and personality disorders, 3) whether the presence of a personality disorder represents an increase in overall psychopathology.

Method: The study sample consisted of 51 consecutive outpatients who attended a Mental Health Center between 1990 and 2002 and received a DSM-III-R or DSM-IV diagnosis of hypochondriasis. All other patients (N=2695) who attended the Center during the same period and received any other Axis I and/or Axis II diagnosis were used as a control group for Axis II diagnoses. Patients with an Axis I diagnosis of any other somatoform disorder (N=250) were used as a control group regarding the investigation of the demographic characteristics of the hypochondriacal patients. All patients included in the study completed the Eysenck Personality Questionnaire (EPQ) and those with at least a ninth grade of education additionally completed the Minnesota Multiphasic Personality Inventory (MMPI).

Results: Forty one (80%) of the hypochondriacal patients had another current Axis I diagnosis and this rate increased to 88% when lifetime diagnoses were recorded. The most frequent comorbid diagnoses were anxiety disorders (59%), mainly panic disorders (45%), followed by depressive disorders (45%). Thirty five (68%) patients met the criteria for a personality disorder, a rate significant higher than that of the control group (53%). Obsessive-compulsive personality disorder and personalities of cluster C in general appeared significantly more frequently in the study than in the control group. Hypochondriacal patients with a concomitant personality disorder manifested significantly higher scores on almost all the MMPI scales and on scale N of the EPQ and significantly lower score on scale E of the latter in comparison to those without. The group of hypochondriasis has a significantly higher proportion of men, more years of education and higher rate of comorbidity with OCD than the group of other somatoform disorders. **Conclusions:** Hypochondriasis has a high rate of comorbidity with other clinical syndromes and personality disorders. The presence of a personality disorder is related to more severe overall psychopathology. Hypochondriasis is differentiated from the rest of somatoform disorders regarding sex ratio, educational level and comorbidity with OCD. If, in addition, the high comorbidity with anxiety disorder in general is taken into account, previous suggestions to place hypochondriasis in the anxiety disorders section may be worth reconsidering.

Key words: hypochondriasis; demographic characteristics; comorbidity.

Hypochondriasis is defined as an intense preoccupation with fears of having or the idea that one has a serious disease based on misinterpretation of one or more bodily signs or symptoms¹. According to the classification of APA, DSM-III/-R/IV hypochondriasis is classified in the section of somatoform disorders. However, during the development of DSM-VI there have been suggestions that hypochondriasis is placed within the anxiety disorders section². Furthermore, it is well known that hypochondriasis

is among the disorders which have been proposed to constitute the so called obsessive-compulsive spectrum^{3,4}.

Hypochondriasis manifests a high comorbidity with other clinical syndromes (axis I diagnoses) although there are few recent studies investigating the topic in detail^{5,6}. The co-occurrence of more than one clinical syndromes has important clinical implications regarding symptom severity, prognosis, course and treatment response and

also provides useful information regarding etiology^{6, 7-11}. Similarly interesting is the correlation of clinical syndromes with personality disorders (axis II diagnoses). This topic does not simply have a theoretical interest, but mainly practical implications as there are reports supporting that the presence of a personality disorder is associated with severer symptomatology, more relapses, poorer prognosis and treatment response, as well as worse psychosocial/occupational functioning^{10, 12-18}. Unfortunately, there are no studies investigating in detail the comorbidity between hypochondriasis and personality disorders in general and specific personality disorders in particular.

The aim of the present study is to investigate:

- 1) the demographic characteristics of hypochondriasis in comparison to those of other somatoform disorders,
- 2) the comorbidity of hypochondriasis with other clinical syndromes (axis I) and personality disorders (axis II), and
- 3) whether patients with a concomitant personality disorder have more severe overall psychopathology compared to those without a personality disorder.

METHOD

The Sample of the study consisted of consecutive outpatients who attended the Community Mental Health Center of North-Western district of Thessaloniki in Greece for a period of 12 years (1990-2002) and received a diagnosis of hypochondriasis according to DSM-III-R or DSM IV criteria. A DSM (III, III-R and IV) diagnosis is a standard practice in the Center and all the scientific personnel involved in diagnostic interviews are trained and experienced in its use. The Axis I diagnoses were made at the disposition conference by consensus of the whole therapeutic team. All the Axis II diagnoses were made according to DSM-III-R criteria using the Structured Clinical Interview from DSM-III-R Axis II (SCID-II) in conjunction with the SCID Personality Questionnaire¹⁹. These instruments have been translated into Greek and their diagnostic sensitivity has been validated for the Greek population²⁰. All other patients who attended the Center during the same period (1990-2002) followed the same diagnostic procedure and received any other Axis I and/or Axis II diagnosis were used as a control group for Axis II diagnoses. Patients with an Axis I diagnosis of any other somatoform disorder were used as a control group regarding the investigation of the demographic characteristics of the hypochondriacal patients. The current level of functioning was assessed with the Global Assessment of Functioning (GAF) scale of the DSM-III-R/DSM-IV. All patients under study who had at least a ninth-grade education completed the Minnesota Multiphasic Personality Inventory (MMPI), which was

adapted for use in Greece²¹. The MMPI, a test for assessing personality characteristics, is also a useful device in assessing psychopathology²² and thus has been used for this purpose in many comparative studies between groups of patients. MMPIs that were invalid (i.e. false positive or false negative) were excluded. Finally, all the hypochondriacal patients who had at least a sixth-grade education completed in addition the Eysenck Personality Questionnaire (EPQ), which had also been adapted for use in Greece²³.

RESULTS

From a total sample of 2746 outpatients who attended the Center, 51 (1.9%) received a DSM-III-R or DSM-IV diagnosis of hypochondriasis. Their demographic characteristics compared to those of patients with other somatoform disorders (N=250) are presented in Table 1.

Table 1. Demographic characteristics of the patients with hypochondriasis compared to those with other somatoform disorders

	Hypochondriasis (N=51)		Other somatoform (N=250)	
	n	%	n	%
Sex ^a				
Male	22	43	58	23
Female	29	57	192	77
Marital Status				
Single	28	55	127	51
Married	19	37	95	38
Divorced/ Widowed	4	8	28	11
Age (years)	35.6±10.0		36.3±11.3	
Education (years) ^b	11.8±3.3		9.7±4.0	

^a: chi-square, df=1, $\chi^2=8.63$, $p<0.01$
^b: two-tailed t-test, df=299, $t=9.72$, $p<0.001$

The group of hypochondriasis has a significantly higher proportion of men and also more years of education than the group of other somatoform disorders. The age of onset of hypochondriasis was 28.9±8.5 years and the duration of the illness 6.7±4.2 years. Of the hypochondriacal patients 80% qualified for another Axis I diagnosis of current disorder and 88% for another lifetime disorder (Table 2). The most frequent comorbid disorders were anxiety disorders (51% current and 59% lifetime), mainly panic disorder with or without agoraphobia followed by depressive disorder (39% current and 45% lifetime), mainly major depression. It is worth mentioning the high comorbidity of hypochondriasis with obsessive-compulsive

Table 2. Comorbid Axis I diagnoses in patients with hypochondriasis (N=51)

	Current		Lifetime	
	n	%	n	%
Major depression	14	27	16	31
Dysthymia	3	6	4	8
Depression NOS	3	6	3	6
Depressive disorders (total)	20	39	23	45
Panic disorder ± AGF	20	39	23	45
Generalized anxiety	2	4	3	6
Social phobia	3	6	4	8
Specific phobia	2	4	2	4
OCD	9	18	9	18
Anxiety NOS	1	2	1	2
Anxiety disorders (total)	26	51	30	59
Other somatoform	7	14	9	18
Sexual disorders	1	2	1	2
Alcohol abuse	0	0	3	6
Any Axis I	41	80	45	88
No Axis I	10	20	6	12

NOS: Not otherwise specified, AGF: Agoraphobia, OCD: Obsessive-compulsive disorder

disorder (OCD) (18% - 9 out of 51), while the patients with another somatoform disorder manifested it in only 3% (7 out of 250) of cases. This difference was statistically significant ($\chi^2=18.55$, $df=1$, $p<0.001$). Needless to say that obsessions and/or compulsions were unrelated to concerns about illness.

An effort was made to determine the temporal relationship of coexisting disorders and hypochondriasis. In 20 subjects, anxiety disorders preceded the onset of hypochondriasis by six months or more, in 5 the onset of anxiety disorder and hypochondriasis were coincident and in 5 the onset of anxiety followed the onset of hypochondriasis by six months or more. In contrast, only in 4 subjects the onset of a depressive disorder preceded that of hypochondriasis by six months or more, in 5 the onset of the two disorders coincided and in 14 the onset of depression followed the onset of hypochondriasis by six months or more. The comparison of the above data indicates a statistically significant difference ($\chi^2=14.26$, $df=2$, $p<0.001$). Hypochondriacal patients with a comorbid axis I disorder had a significantly earlier age at onset of hypochondriasis and a significantly lower score in GAF (i.e. worse level of functioning) compared to subjects with no coexisting axis I disorder (27.9 ± 8.6 vs. 36.3 ± 8.0 , $t=2.28$, $df=49$, $p<0.05$) and (54.2 ± 8.5 vs. 63.6 ± 10.3 , $t=2.14$, $df=49$, $p<0.05$).

Hypochondriacal patients exhibited significantly more frequently any personality disorder, obsessive-compulsive and cluster C personalities compared to the patients with other diagnoses (Table 3). Patients under study with a concomitant personality disorder (N=35) had a significantly earlier age at onset of hypochondriasis and a significantly lower score on GAF (i.e. worse level of functioning) compared to the hypochondriacal patients without a personality disorder (N=16) (26.7 ± 7.4 vs. 33.8 ± 9.4 , $t=2.67$, $df=49$, $p<0.05$) and (53.1 ± 8.8 vs. 60.2 ± 10.1 , $t=2.42$, $df=49$, $p<0.05$).

Table 3. Distribution of personality disorders in patients with hypochondriasis and those with other diagnoses (n=2746)

Personality disorder	Hypochondriasis (n=51)		Other (n=2695)	
	n	%	n	%
Any	35	69	1401	52*
Cluster A	3	6	125	5
Cluster B	12	24	602	23
Cluster C	16	31	410	16*
Paranoid	1	2	54	2
Schizoid	0	0	12	<1
Schizotypal	2	4	65	2
Antisocial	0	0	17	<1
Borderline	7	14	411	16
Histrionic	8	16	254	10
Narcissistic	1	2	55	2
Avoidant	4	8	139	5
Dependent	5	10	125	5
Obsessive-Compulsive	11	22	195	7***
Passive-Aggressive	1	2	47	2
NOS	7	14	395	15
Self-defeating	2	4	51	2

NOS: Not otherwise specified.
* $p<0.05$, ** $p<0.01$, *** $p<0.001$;
 χ^2 with Yates correction when necessary; $df=1$

Out of 51 patients 46 completed the MMPI and their tests were valid. Table 4 presents the statistical comparison between hypochondriacal patients with (N=31) and without (N=15) a personality disorder for the MMPI scores on the clinical scales, the sum of clinical scales and research scales such as A (anxiety), Mas (manifested anxiety), Dy (dependency), Mor (poor moral), Soc (social maladjustment), D1 (depression), Dep (subjective depression) and Es (ego strength). Patients with a personality disorder had significantly higher scores on all but two (Mf and Ma) scales compared to those without. It should be pointed out that on scale Es a higher score

Table 4. Mean MMPI T scores on clinical, sum of clinical and research scales of hypochondriacal patients with and without a personality disorder

Scale	Personality disorder	
	Yes (N=31)	No (N=15)
Hs	78.5±11.4	70.2±10.0*
D	72.3±10.7	64.0±8.4**
Hy	71.0±11.6	61.8±9.3**
Pd	62.6±8.3	56.1±6.7**
Mf	52.0±11.3	51.8±11.0
Pa	62.7±8.4	56.6±9.1*
Pt	76.4±7.9	64.9±8.8***
Sc	63.7±7.5	57.4±8.6*
Ma	52.2±9.6	50.4±11.5
Si	60.8±5.6	56.0±6.5*
Sum	652.1±47.0	589.2±55.6***
A	59.3±7.6	53.2±8.3*
Mas	63.4±7.6	57.2±6.9**
Dy	61.1±8.3	54.2±8.5*
Mor	61.2±8.3	55.1±8.6*
Soc	58.3±8.4	52.1±7.3*
D1	67.7±6.9	59.1±8.9**
Dep	61.5±7.8	54.6±7.6**
Es	34.6±7.7	41.8±8.4**

Es: A higher score indicates better psychological state
*p<0.05, **p<0.01, ***p<0.001: two tailed t test; df=44

means better psychological state. Similarly, patients with a comorbid personality disorder (N=35) manifested a significantly higher score on scale N (Neuroticism) and a lower score on scale E (Extraversion) than those without a personality disorder (N=16) (Table 5).

Hypochondriacal fears/beliefs were distributed in the 51 patients as follows: 21 subjects (41%) had the fear/belief of having cancer, 12 (23%) of having a cardiac disease or of developing a stroke, 2 (4%) of having cancer plus another disease, 7 (14%) of having cardiac disease or stroke plus another disease and finally 9 (18%) of having cancer and a cardiac disease or stroke. Obviously the most frequent fears/beliefs were of having cancer which exists alone or in combination with other fears in 63% of the patients, while fears/beliefs of having a cardiac disease or developing a stroke manifested the 55% of the hypochondriacal subjects. As the fear to have a heart attack or stroke is a very common fear during a panic attack, hypochondriacal patients with or without a comorbid diagnosis of panic disorder were compared regarding the presence or not of the above fears. Of the 23 patients with a lifetime comorbid diagnosis of panic disorder, 12(52%) had the above mentioned hypochondriacal fear/belief compared to the

Table 5. Mean EPQ score of hypochondriacal patients with and without a personality disorder

Scale	Personality disorder	
	Yes (N=35)	No (N=16)
P	4.5±2.6	3.4±2.6
N	18.7±2.7	15.2±3.0**
E	9.7±3.7	12.1±2.4*
Λ	10.4±2.4	11.2±2.9

*p<0.05, **p<0.01, ***p<0.001: two tailed t test; df=49

16(57%) out of 28 patients without a comorbid panic disorder diagnosis. This difference did not reach statistical significance ($\chi^2 = 0.12$, $df=1$, $p>0.1$).

In 32 out of 61 patients (63%), a death of a family member or close relative had happened in the past, before the onset of hypochondriasis. Twenty eight out of these 32 patients (87.5%) developed a fear/belief, alone or in combination with other fears/beliefs, of the illness which was the cause of the death of the family member or relative, while in 19 (59%) subjects this was the only fear/belief they manifested.

DISCUSSION

The percentage of 1.9% of the total sample with hypochondriasis is quite similar to the 1.6% of an Italian study²⁴ in psychiatric outpatients and inpatients. Unfortunately, there are no recent studies investigating hypochondriasis in psychiatric outpatient samples. Most recent existing studies are dealing with patients attending primary care settings or medical outpatients in general, and they present higher percentages of hypochondriasis 3.4-8.5%^{6, 25-27}. An earlier English study carried out 40 years ago, in psychiatric outpatients, but without the use of specific diagnostic criteria, reported a much lower prevalence of hypochondriasis (0.9%)²⁸. The difference may be at least partly due to cultural differences and it is congruent with other research findings suggesting that Greeks and other culturally similar populations, like Italians, "somatize" more than the Anglo-Saxons²⁹⁻³¹. The frequent comorbidity of hypochondriasis with both depressive and anxiety disorders raises a question regarding what exactly is the nature of the comorbidity. In a study like this, one cannot clearly answer the question, but only suggest some hypotheses. One possibility may be that hypochondriasis is a masked expression of depression or anxiety and, in the case of comorbidity, it is a "subsytptom" of a depressive and/or an anxiety syndrome. However, the use in the present and other similar studies of DSM-III-R/DSM-IV criteria does not support this view. An additional argument against this possibility, at least regarding panic disorder, is the finding of the present

study that fears/beliefs of a heart attack or a stroke were not more frequently manifested in hypochondriacal patients with a comorbid panic disorder than in those without. A second possibility may be that depressive and anxiety disorders are complications of hypochondriasis. When an individual constantly lives with a fear/belief that he/she has a serious disease potentially fatal, it is quite understandable that he/she subsequently develops anxiety and/or depression. This possibility seems to apply to comorbid depressive disorders, which according to the present and previous studies⁶ followed the onset of hypochondriasis, but not to comorbid anxiety disorders which usually preceded the onset of hypochondriasis. Furthermore, Pillowsky and Spence³⁹ concluded that hypochondriacal fears and beliefs are predominantly associated with anxiety and that the association with depression is usually secondary. Therefore, a third possibility regarding the nature of comorbidity between hypochondriasis and anxiety disorders may be that these disorders share common underlying processes. In a family study⁴⁰, it was found that the relatives of hypochondriacal patients significantly more frequently manifested any anxiety disorder and GAD than the relatives of the control subjects. Otto et al⁴¹ reported that hypochondriacal concerns most strongly associated with anxiety sensitivity. Thus they related hypochondriasis to the abnormal cognitive style characteristic of patients with panic disorder⁴². Furthermore, Demopoulos et al⁴³ supported that, even among depressed patients, hypochondriacal preoccupations are more closely related to anxiety than to depressive symptoms. In that study depressed outpatients with a lifetime history of panic disorder reported greater hypochondriacal concerns than those without this diagnosis. In addition, some studies suggested that serotonin reuptake inhibitors i.e. fluoxetine and fluvoxamine were a beneficial treatment for patients with hypochondriasis even for those without a comorbid anxiety or depressive disorder⁴⁴⁻⁴⁶. Therefore one can hypothesize that hypochondriasis and anxiety disorders may share a common diathesis that can be defined as "anxiety diathesis". This diathesis may lead some patients initially to develop an anxiety disorder and later hypochondriasis. As it was shown in the present and other studies^{6, 38}, the onset of anxiety disorder preceded the onset of hypochondriasis. Furthermore, patients with hypochondriasis may also exist who never manifest an overt anxiety disorder. It is possible, that developmental experiences and life events such as a death of a family member could play an important role in the manifestation of hypochondriasis. An impressive finding of the present study was that almost two thirds of the hypochondriacal patients had the experience of a death in their family environment and that 9 out of 10 of the above patients later developed a fear/belief of the disease which had been the cause of death of their family member. Fear of death

appears to be an integral part of hypochondriasis⁴⁷, while, psychodynamically, hypochondriasis has been looked upon as a defence against the fear of death⁴⁸, which fear can be reinforced by the experience of death of a close relative. Furthermore, other environmental factors, such as childhood illness⁴⁹⁻⁵¹ and physical or sexual abuse⁵⁰, may play an important role in the development of the disorder. Of special interest is the relationship of hypochondriasis and OCD. Striking phenomenological similarities exist between the two disorders^{46,52} and the notion supported by some investigations is well known that hypochondriasis may fall within the OCD spectrum⁴⁶. The high comorbidity of OCD in hypochondriacal patients found in the present as well as in other studies³⁶ and vice versa the higher comorbidity of hypochondriasis in OCD than in control groups⁵³ provide further support for a link between the two disorders. Furthermore, a family study of OCD⁵³ identified a higher frequency, although not statistically significant, of hypochondriasis among the first-degree relatives of OCD patients compared to those of control subjects. In addition serotonin reuptake inhibitors i.e. fluoxetine, fluvoxamine have been shown effective for OCD were also reported to be effective for hypochondriasis^{45,46}. A final argument arises from the finding of the present study that OCD comorbid considerably more with hypochondriasis than with other somatoform disorders. The onset of OCD preceded the onset of hypochondriasis according to the present as well as other studies⁵⁴. Therefore, one can hypothesize that a share diathesis may exist between OCD and hypochondriasis, at least in some hypochondriacal subjects, which leads at first in the manifestation of OCD and later in that of hypochondriasis. It is worth noting that it has been supported that hypochondriasis may have several distinct subtypes one of which is more similar to OCD and the other more similar to somatization disorder⁵².

The relatively low comorbidity of hypochondriasis with other somatoform disorders in the present study, compared to the results of other studies^{5,37}, in conjunction with the findings that the two entities i.e. hypochondriasis and other somatoform disorders differ significantly regarding sex ratio, educational level and frequency of comorbidity with OCD are indications that hypochondriasis may be differentiated from the rest of somatoform disorders. From the above and also given the high comorbidity of hypochondriasis with anxiety disorders in general, the question might be asked again whether to place hypochondriasis within the anxiety disorder section, in a future diagnostic classification.

Hypochondriacal subjects with comorbid axis I diagnosis were more impaired in overall functioning and had an earlier onset of hypochondriasis, findings which are in line with other reports⁶.

Hypochondriasis also has a high comorbidity with personality disorders (Axis II diagnoses), significantly

higher (69% vs. 52%) than the control group. There are no other recent studies investigating thoroughly and analytically this issue, as the present one did. The only two other existing studies^{5,6} use the 5-item impairment/distress subscale of the Personality Diagnostic Questionnaire for personality disorder assessment. Using this instrument one can only report on the probability of the patients having a personality disorder but cannot address the specific nature of the disorder⁵ as with the SCID-II. However, these two studies also concluded that hypochondriacal subjects were more likely to have a probable personality disorder than controls. The strong association of hypochondriasis with obsessive-compulsive personality disorder and personalities from cluster C confirms the results of earlier studies (without use of DSM classification) by Kenyon²⁸ and Pillowsky⁵⁵ who found that in hypochondriasis the most frequent personality traits were obsessional and anxious. Furthermore, this is an additional indication in favour of a link between hypochondriasis and anxiety disorders as it has been reported that obsessive compulsive personality disorder and personalities from cluster C are significantly comorbid with GAD^{18,56,57}, OCD^{58,59} or panic disorder⁶⁰. A further argument regarding the differentiation of hypochondriasis from other somatoform disorders i.e. somatization, undifferentiated somatoform and conversion disorder is that these coexist more frequently with histrionic personality disorder and personalities from cluster B^{17,61,62}.

As was shown by the results of MMPI, hypochondriacal patients with a personality disorder had severer overall psychopathology compared to those without, while also manifested a higher neuroticism and lower extraversion level according to the results of EPQ. In the only previous existing study Noyes et al⁶ confirmed the above findings regarding neuroticism, but not regarding extraversion and also reported that the presence of a personality disorder was related to more hypochondriacal symptoms. Furthermore, there are studies on other clinical syndromes such as major depression⁶³, panic disorder⁸, social phobia^{64,65}, OCD⁶⁶, GAD^{18,67} or anxiety and/or depressive disorder in general¹⁰, stating that the co-occurrence of Axis I and Axis II diagnoses indicates more severe psychopathology. In addition, it has been suggested that this co-occurrence predicts a negative treatment outcome, more relapses and generally a poorer prognosis^{8,10,12-18} and worse psychosocial/occupational functioning.

The last finding has also been confirmed for the hypochondriacal patients by the results of the GAF and the Soc scale of the MMPI in the present study. It has also been shown that the presence of a personality disorder is related to an earlier age of onset of hypochondriasis.

It is not clear whether there is a pre-existing personality disorder that leads to a more severe psychopathology of the clinical syndrome, i.e. hypochondriasis, or whether a syndrome with more severe clinical picture influences the patient's personality and "creates" personality disorders. Furthermore, it should be mentioned that some existing reports are claiming that symptom severity may be a confounding factor in personality assessment, the so called trait-state artifact^{68,69}, whereas different opinions also exist⁷⁰. All the above highlight the importance of personality assessment in the evaluation of the clinical syndrome, i.e. hypochondriasis, in clinical practice.

In conclusion, the present study conducted with a sample of Greek outpatients indicated that hypochondriasis is frequently associated with other clinical syndromes, mainly anxiety and depressive disorders, as well as with personality disorders, mainly obsessive-compulsive personality disorder and personalities from cluster C. There are indications that this association is stronger with anxiety disorders, the onset of which usually precedes that of hypochondriasis, while depressive disorders usually follow the onset of hypochondriasis and may be seen as a complication. Psychosocial stressors, in particular a death in the family environment, may significantly contribute in the development of hypochondriasis. Hypochondriasis is differentiated from other somatoform disorders regarding sex ratio, educational level and comorbidity with OCD. From the above and also given the high comorbidity with anxiety disorders in general, it might be worth examining again the possibility of including hypochondriasis among anxiety disorders in future diagnostic classifications. The comorbidity of hypochondriasis with other axis I diagnoses is related to worse level of functioning and earlier onset of hypochondriasis, while the comorbidity with axis II diagnoses is additionally associated with more severe overall psychopathology. All the above underline the importance of comorbidity issues both at the level of clinical practice and at the level of psychiatric research and ought to be investigated further.

References

1. American Psychiatric Association, Diagnostic and Statistical Manual of Mental Disorders Ed. 4, Washington DC: American Psychiatric Press, 1994
2. Task Force on DSM-IV: DSM-IV Options Book, Work in Progress, Washington DC, American Psychiatric Association, 1991
3. Hollander E., Wong C. Obsessive compulsive spectrum disorders. *J. Clin. Psychiatry* 1995; 56(Suppl.): 3-6
4. Crino R. Obsessive compulsive spectrum disorders. *Curr. Opin. Psychiatry* 1999; 12: 151-155
5. Barsky A., Wysack G., Klerman G. Psychiatric comorbidity in DSM-III-R hypochondriasis. *Arch. Gen. Psychiatry* 1992; 49: 101-108
6. Noyes R., Kathol R., Fisher M., Phillips B., Suelzer M., Woodman C. Psychiatric comorbidity among patients with hypochondriasis. *Gen. Hosp. Psychiatry* 1994; 16: 78-87

7. Grunhaus L., Rabin D., Greden J. Simultaneous panic and depressive disorder: Response to antidepressant treatment. *J. Clin. Psychiatry* 1986; 47: 4-7
8. Noyes R., Reich J., Christiansen J., Suelzer M., Pfohl B., Coryell W. Outcome of panic disorder. Relationship to diagnostic subtypes and comorbidity. *Arch. Gen. Psychiatry* 1990; 47: 809-818
9. Coryell W., Endicott J., Winokur G. Anxiety syndromes as epiphenomena of primary major depression. Outcome and familial psychopathology. *Am. J. Psychiatry* 1990; 149: 100-107
10. Garyfallos G., Adamopoulou A., Voikli M., Saitis M., Kirtsos P., Moutzoukis C. DSM-III-R personality disorders among patients with depressive and/or anxiety disorders. *J. Pers. Disord.* 1994; 8: 320-322
11. Neale M., Kendler K. Models of comorbidity for multifactorial disorders. *Am. J. Hum. Genet.* 1995; 57: 935-953
12. Black D., Bell S., Hulbert J., Nasrallah A. The importance of Axis II in patients with major depression. A controlled study. *J. Affect. Disord.* 1988; 14: 115-122
13. Nurnberg G., Raskin M., Levin P., Pollack S., Prince R., Siegel O. Borderline personality disorder as a negative prognostic factor in anxiety disorders. *J. Pers. Disord.* 1989; 3: 205-216
14. Klass E., DiNardo P., Barlow D. DSM-III personality diagnoses in anxiety disorder patients. *Compr. Psychiatry* 1989; 30: 251-258
15. Reich J., Green A. Effect of personality disorders on outcome of treatment. *J. Nerv. Ment. Dis.* 1991; 179:74-82
16. Sanderson W., Wetzler S., Beck A., Betz F. Prevalence of personality disorders in patients with major depression and dysthymia. *Psychiatry Res.* 1992; 42: 93-99
17. Garyfallos G., Adamopoulou A., Karastergiou A., Voikli M., Ikonomidis N., Donias S., Giouzevas J., Dimitriou E. Somatoform disorders: Comorbidity with other DSM-III-R psychiatric diagnoses in Greece. *Compr. Psychiatry* 1999; 40: 299-307
18. Garyfallos G., Adamopoulou A., Karastergiou A., Voikli M., Milis V., Donias S., Giouzevas J., Parashos A. Psychiatric comorbidity in Greek patients with generalised anxiety disorders. *Psychopathology* 1999; 32: 308-318
19. Spitzer R., Williams J., Gibbon M. Structural Clinical Interview for DSM-III-R (SCID). New York, New York State Psychiatric Institute 1987
20. Manos N., Hatzisavas S., Monas K., Donias S., Simos G. Validating the SCID-II in conjunction with the SCID Personality Questionnaire. VIII World Congress of Psychiatry, Athens, October 1989
21. Manos N. Adaptation of the MMPI in Greece. In: Butcher J., Spielberg C. (eds): *Advances in Personality Assessment*, Hillsdale Erlbaum 1985: 159-208
22. Beutler L., Crago M. Self-report measures of psychotherapy outcome. In: Lambert M., Christensen E., Dejulio S. (eds): *The assessment of psychotherapy outcome*. New York, Wiley 1983: 453-497
23. Dimitriou E. The Eysenck Personality Questionnaire (EPQ) in the study of the Greek personality and its use in clinical practice. Thessaloniki 1977 (in Greek)
24. Altamura A., Carta M., Tacchini G., Musazzi A., Pioli M. Prevalence of somatoform disorders in a psychiatric population: An Italian nationwide survey. *Eur. Arch. Psychiatry Clin. Neurosci.* 1998; 248: 267-271
25. Kirmayer L., Robins J. Three forms of somatization in primary care: prevalence, co-occurrence and sociodemographic characteristics. *J. Nerv. Ment. Dis.* 1991; 129: 647-655
26. Peveler R., Kilkenny L., Kinmonth A. Medically unexplained symptoms in primary care: a comparison of self-reporting screening questionnaire and clinical opinion. *J. Psychosom. Res.* 1997; 42: 245-252
27. Escobar J., Gara M., Waitzkin H., Cohen Silver R., Holman A., Compton W. DSM-IV hypochondriasis in primary care. *Gen. Hosp. Psychiatry* 1998; 20: 155-159
28. Kenyon E. Hypochondriasis: A clinical study. *Br. J. Psychiatry* 1964; 110: 478-488
29. Graham S. Ethnic background and illness in a Pennsylvania county. *Soc. Probl.* 1956;4: 76-82
30. Pillowski I., Spence N. Ethnicity and illness behaviour. *Psychol. Med.* 1977; 7: 447-452
31. Adamopoulou A., Garyfallos G., Bouras N., Kouloumas G. Mental Health and primary care in ethnic groups. Greek Cypriots in London: a preliminary investigation. *Int. J. Soc. Psychiatry* 1990; 36: 243-251
32. Schaub R., Linden M. Anxiety and anxiety disorders in the old and very old - Results from the Berlin ongoing study (BASE). *Compr. Psychiatry* 2000; 41 (suppl. 1): 48-54
33. Hiller W., Leibbrand R., Rief W., Fichter M. Predictors of course and outcome in hypochondriasis after Cognitive-Behavioral Therapy. *Psychother. Psychosom.* 2002; 71: 318-325
34. Warwick H., Salkovskis P. Hypochondriasis *Behav. Res. Ther.* 1990; 28: 105-117
35. Barsky A., Barnett M., Cleary P. Hypochondriasis and panic disorder. Boundary and overlap. *Arch. Gen. Psychiatry* 1994; 51: 918-925
36. Fallon B., Rasmussen S., Liebowitz M. Hypochondriasis In: Hollander E. (ed.) *Obsessive compulsive related disorders*. Washington DC, American Psychiatric Press 1993: 179-202
37. Tyrer P., Lee I., Alexander J. Awareness of cardiac function in anxious, phobic and hypochondriacal patients. *Psychol. Med.* 1980; 10: 171-174
38. Bach M., Nutzinger D., Hartl L. Comorbidity of anxiety disorders and hypochondriasis considering different diagnostic systems. *Compr. Psychiatry* 1996; 37: 62-67
39. Pillowski I., Spence N. *Manual of the Illness Behavior Questionnaire (IBQ)* 2nd ed. University of Adelaide, South Australia, 1983
40. Noyes R., Holt C., Happel R., Kathol R., Yagla S. A family study of hypochondriasis. *J. Nerv. Ment. Dis.* 1997; 185: 223-232
41. Otto M., Pollack M., Sachs G., Rosenbaum J. Hypochondriacal concerns, anxiety, sensitivity and panic disorder. *J. Anxiety Dis.* 1992; 6: 93-104
42. Noyes R. The relationship of hypochondriasis to anxiety disorders. *Gen. Hosp. Psychiatry* 1999; 21: 8-17
43. Demopoulos Ch., Fava M., McLean N., Alpert J., Nierenberg A., Rosenbaum J. Hypochondriacal concerns in depressed outpatients. *Psychosom. Med.* 1996; 58: 314-320

44. Fallon B., Liebowitz M., Salman S., Schneier F., Jusini C., Hollander E., Klein D. Fluoxetine for hypochondriacal patients without major depression. *J. Clin. Psychopharmacol.* 1993; 13: 438-441
45. Fallon B., Schneier F., Marshall R., Campeas R., Vermes D., Goetz D., Liebowitz M. The pharmacotherapy of hypochondriasis. *Psychopharmacol. Bull.* 1996; 32: 607-611
46. Fallon B., Qureshi A., Schneier F., Sanchez-Lacay A., Vermes D., Feinstein R., Connelly J., Liebowitz M. An open trial of fluvoxamine for hypochondriasis. *Psychosomatics* 2003; 44: 298-303
47. Noyes R., Stuart S., Longley S., Longbehn D., Happel R. Hypochondriasis and fear of death. *J. Nerv. Ment. Dis.* 2002; 190: 503-509
48. Wahl C. Unconscious factors in the psychodynamics of the hypochondriacal patient. *Psychosomatics* 1963; 4: 9-14
49. Benjamin S., Eminson D. Abnormal illness behaviour: childhood experiences and long-term consequences. *Int. Rev. Psychiatry* 1992; 4: 55-70
50. Barsky A., Wool C., Barnett M., Cleavy P. Histories of childhood trauma in adult hypochondriacal patients. *Am. J. Psychiatry*; 1994; 151: 379-401
51. Noyes R., Happel R., Yagla S. Correlates of hypochondriasis in a nonclinical population. *Psychosomatics* 1999; 40: 461-469
52. McElroy S., Phillips K., Keck P. Obsessive compulsive spectrum disorder. *J. Clin. Psychiatry* 1994; 55 (10 suppl.): 33-51
53. Bienvu O., Samuels J., Riddle M., Hoehn-Saric R., Liang K., Cullen B., Grados M., Nestadt G. The relationship of obsessive-compulsive disorder to possible spectrum disorders: results from a family study. *Biol. Psychiatry* 2000; 48: 287-293
54. Fallon B., Javitch J., Hollander E., Liebowitz M. Hypochondriasis and obsessive compulsive disorder: overlaps in diagnosis and treatment. *J. Clin. Psychiatry* 1991; 52: 457-460
55. Pillowski I. Primary and secondary hypochondriasis. *Acta Psychiatr. Scand.* 1970; 46: 273-285
56. Mancuso D., Townsend M., Mercante D. Long-term follow-up of generalized anxiety disorder. *Compr. Psychiatry* 1993; 34: 441-446
57. Okasha A., Omar A., Lotaief F., Ghamen M., El-Dawla A., Okasha I. Comorbidity of axis I and axis II diagnoses in a sample of Egyptian patients with neurotic disorders. *Compr. Psychiatry* 1996; 32: 95-101
58. Diaferia G., Bianchi I., Bianchi M., Cavedini P., Erzegovesi S., Bellodi L. Relationship between obsessive-compulsive personality disorder and obsessive-compulsive disorder. *Compr. Psychiatry* 1997; 38: 38-42
59. Bejerot E., Ekselius L., von Knorring L. Comorbidity between obsessive-compulsive disorder and personality disorders. *Acta Psychiatr. Scand.* 1998; 97: 398-402
60. Reich J., Troughton E. Frequency of DSM-III personality disorders in patients with panic disorders. Comparison with psychiatric and normal control subjects. *Psychiatry Res.* 1988; 26: 89-100
61. Lilienfeld S., Van Valkenburg C., Larentz K., Akiskal H. The relationship of histrionic personality disorder to antisocial personality and somatization. *Am. J. Psychiatry* 1986; 143: 718-722
62. Morrison J. Histrionic personality disorder in women with somatization disorder. *Psychosomatics* 1989; 30: 433-437
63. Shea T., Glass D., Pilkonis P., Watkins J., Docherty J. Frequency and implications of personality disorders in a sample of depressed outpatients. *J. Pers. Disord.* 1987; 1: 27-42
64. Herbert J., Hope D., Bellack A. Validity of the distinction between generalized social phobia and avoidant personality disorder. *J. Abnorm. Psychol.* 1990; 101: 332-339
65. Garyfallos G., Adamopoulou A., Donias S., Bitsios P., Voikli M., Parashos A. Social phobia: Comorbidity with other DSM-III-R psychiatric disorders. *Encephalos* 1995; 32: 377-386 (in Greek)
66. Mavissakalian M., Hamann M., Jones B. Correlates of DSM-III personality disorder in obsessive-compulsive disorder. *Compr. Psychiatry* 1990; 31: 481-489
67. Mavissakalian M., Hamann M., Haidar S., de Groot C. Correlates of DSM-III personality disorder in generalized anxiety disorder. *J. Anxiety Dis.* 1995; 9: 103-115
68. Stuart S., Simons A., Thase M., Pilkonis P. Are personality disorders valid in acute major depression? *J. Affect. Disord.* 1992; 24: 281-290
69. Reich J., Noyes R., Corryel W., O' Gorman T. The effect of state anxiety on personality measurement. *Am. J. Psychiatry* 1986; 143: 760-763
70. Loranger A., Lenzenweger M., Gartner A., Lehmann V., Herzog J., Zammit G., Gartner J., Abrams R., Young R. Trait-state artifacts and the diagnosis of personality disorders. *Arch. Gen. Psychiatry* 1992; 48: 720-728

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