

Somatization Symptoms and Hypochondriacal Features in the General Population

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Objective: The principal goal of this study is to examine the base rates of somatoform symptoms and of hypochondriacal features in the general population. **Methods:** A representative sample of 2050 persons in Germany was examined by use of screening for somatoform symptoms and the Whiteley Index. **Results:** The most frequent somatoform symptoms were back pain, joint pain, pain in extremities, and headache, as well as abdominal symptoms (bloating or intolerance of several foods) and cardiovascular symptoms (palpitation). People reported a mean of two somatization symptoms of DSM-IV somatization disorder (SD) during the prior 2 years. Strong age and medium gender effects were found for most somatoform symptoms, as well as for composite indices. However, the sex ratio suggested in DSM-IV for SD seems to be an overestimation. Hypochondriacal features showed only small sex differences but, again, pronounced age effects. In contrast to low rates for SD, the base rates for somatization and hypochondriacal features were high and represented the health care relevance of subthreshold syndromes. **Conclusion:** We present base rates of hypochondriacal and somatization features that may be important facets in the development of classification criteria and in the interpretation of health care expenditure. **Key words:** somatization, hypochondriasis, Whiteley Index, general population, gender differences.

SOMS = Screening for Somatoform Symptoms; WI = Whiteley-Index; SSI = Somatic Symptom Index; PSS = polysymptomatic somatization disorder; SAD = somatoform autonomic dysfunction; SD = somatization disorder; DSM-III-R = *Diagnostic and Statistical Manual of Mental Disorders*, third edition, revised; DSM-IV = *Diagnostic and Statistical Manual of Mental Disorders*, fourth edition; ICD-10 = International Classification of Diseases, 10th revision.

Somatization and hypochondriacal features are associated with an enormous economical burden for society and a substantial reduction in the quality of life of patients. The often-reported high frequency in clinical settings (1, 2) is in contrast with low rates of somatization disorder and other somatoform disorders in the general population (3). Therefore, a modification of diagnostic criteria for the classification systems is needed. Escobar et al. (3) suggested an abridged somatization disorder (SSI-4/6) group of patients with at least four symptoms (for men) or six symptoms (for women). The symptom list was the same as the list of physical complaints of DSM-III-R somatization disorder. We demonstrated that a SSI-3/5 criterion based on the DSM-IV symptom list would be a good equivalent to the SSI-4/6 criterion based on DSM-III-R (4).

To develop empirically based criteria for somato-

form disorders, it is necessary to consider the base rates ("item frequency"), reliability, and discriminant validity of classification criteria. We recently suggested new criteria based on an empirically derived list of physical symptoms that also includes behavioral and cognitive aspects of somatization (5). As prototype, a PSS was suggested. PSS checks for 32 somatization symptoms that had demonstrated sufficient criterion characteristics such as discriminative validity. Additional criteria for PSS are psychological features (such as focused attention or abnormal illness behavior) as well as disability. However, to further develop empirical criteria for the classification, it is necessary to consider the base rates of single symptoms in the general population.

Despite some studies on physical symptoms in the general population (6), there are few studies on somatoform symptoms and even less on hypochondriacal features. The existing literature varies on aspects of the selection of representative populations, the exclusion of existing symptoms without disabling consequences, the definition of a time frame, the exclusion of physical symptoms with a well-known organic pathology, and the reporting of the frequency of single symptoms and features. Therefore, the present study aimed to investigate a sample that is representative of the general population of Germany. All physical symptoms relevant for SD according to DSM-IV or ICD-10 as well as for SAD (according to ICD-10), as well as all items of the WI, a measure of hypochondriasis, were considered. Patients confirmed only those physical symptoms significantly reducing the subjective well being and without a known organic etiology. Because most authors report associations of the frequency of physical symptoms with age as well as with gender, we also investigated which symptoms were gender and age dependent.

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METHODS

Sample Selection and Procedure

A representative sample of the general population of Germany was selected with the assistance of a demography consulting company (USUMA, Berlin). The sample selection was based on the register of the political elections in 1994. The sample was selected to be representative in terms of age, gender, and education. Half the persons were from West Germany, and the other half were from the former German Democratic Republic to have a comparable impact of both political backgrounds. Inclusion criteria were age above 13 years and German as a native language. A total of 201 sample locations were selected, and a first attempt was made for 3125 addresses, following a random-route procedure. The household respondent was selected by chance, and 30.6% of the selected people could not be included in the study because of a lack of willingness to participate or other reasons (not at home even after three attempts, etc). A total sample of 2050 persons in the age range of 14 to 92 years agreed to participate. Sociodemographic variables of these persons are demonstrated in Table 1. In comparison with the originally selected sample and with sociodemographic variables for the German population of 1993, our sample included more women (56% vs 52%) and more people in the age range above 45 years. These differences reflect the nonresponse group and are typical for epidemiological samples. The sample does not allow examination of cross-cultural issues inasmuch as all participants were native German speakers, and the frequency of people grown up in other cultures was negligible.

Assessment Instruments

Screening for somatoform symptoms. The SOMS (7) is a self-rating questionnaire checking for 53 physical symptoms. The questionnaire includes all 33 physical complaints of the DSM-IV somatization disorder symptom list, the symptoms of ICD-10 somatization disorder, and the ICD-10 somatoform autonomic dysfunction symptom list. Subjects were asked whether they had experienced the listed physical symptoms during the last 2 years. They were instructed only to answer "yes" if the symptoms had a significant influence on their subjective well being and if doctors did not find a sufficient explanation for the complaints. Thus, persons with physical illness were not excluded but were instructed only to report physically unexplained symptoms. If necessary, participants could ask trained study assistants for help.

Item 54 to item 68 of the SOMS cover all inclusion and exclusion

TABLE 1. Sociodemographic Variables

	Sample	Germany Jan 1993 (adjusted scores ^a)
N	2050	
Gender		
% women	56%	52%
Age		
14–45	45%	52%
>45	55%	48%
Education		
Primary Education	48.8%	
Qualified High School	43.0%	
University	8.2%	

^a The final sample differs from the demographically expected age ($\chi^2 = 13.14$; df 1; $p < .001$) and gender distribution ($\chi^2 = 39.96$; df 1; $p < .001$) because of the nonresponse group.

criteria (first complaints before age 30 years, symptom duration, acceptance of doctor's explanation that the complaints do not have a physical origin, doctor visits due to the symptoms, etc.). Thus, the SOMS allows one to estimate the criteria for somatization disorder according to DSM-IV and ICD-10 as well as for somatoform autonomic dysfunction. Moreover, the recently suggested symptoms for a PSS were also assessed.

One item of the SOMS asks for hypochondriacal features (item 64: "Are you afraid or convinced that you have a serious disease, but doctors do not find a sufficient explanation?"). The next item (item 65) asks whether these fears or convictions had duration of at least 6 months.

In previous studies with clinical samples, we correlated the number of somatoform symptoms according to the self-rating scale SOMS with the number of somatoform symptoms according to a standardized psychiatric interview. Adding the number of positively answered symptoms allows computation of the "somatization index." The number of somatization symptoms correlated $r = 0.75$ between self-ratings and interview, confirming the high validity of the SOMS. The 72-hour retest reliability was found to be $r_{tt} = 0.85$. Investigating a high-risk group of patients, we compared somatoform disorder diagnosis according to the questionnaire with interview data. We found scores for sensitivity in the range between 86% (SAD-ICD-10) and 100% (SD-DSM-III-R) and scores for specificity between 43% (SAD-ICD-10) and 85% (SD-DSM-IV). This implies that the SOMS provides acceptable estimates for somatoform disorders, perhaps with the exception of somatoform autonomic dysfunction (7).

WI. The Whiteley Index is a 14-item self-rating scale to assess hypochondriacal features (8). The German version of the WI (9) has demonstrated good reliability and validity. We found a comparable factorial structure with the original version confirming three factors. In a clinical sample, the 72-hour retest reliability was $r_{tt} = 0.83$, and item stability was in the range of $\kappa = 0.45$ (item 9) and $\kappa = 0.81$ (item 6). For the present study, we used the yes/no version. The WI total score is the sum of all positively answered items. Analyzing the data of a previous study (10), we found mean scores for hypochondriacs of 8.99, for a clinical comparison group without somatoform and hypochondriac syndromes of 4.36, and for controls of 1.75.

Statistical Analysis

For each symptom, we computed the base rates as well as possible age and sex effects. The variable age was dichotomized (cut-off age 45 years), and afterward, age and gender effects were analyzed by use of logistic regression. This resulted in odds ratios (OR) and 95% confidence intervals (95% CI) for both variables adjusted for one another. For total scores of somatization and hypochondriasis, means and standard deviations for gender and age subgroups will be reported and analyzed by use of t tests.

RESULTS

Base Rates of Somatoform Symptoms

Table 2 presents the base rates of somatoform symptoms. The most frequent symptoms were pain symptoms (back pain 30%, joint pain 25%, pain in extremities 20%, and headache 19%). However, gastrointestinal symptoms (abdominal pain 11%, bloating 13%, and intolerance of several foods 12%) as well as cardiovascular symptoms (palpitation 11%) were also frequent. Base rates of 2% or less indicated rare symp-

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toms, such as rectal pain, pain during intercourse, vomiting, discharge of fluids from anus, unpleasant sensations around the genitals, paralysis and muscle

weakness, loss of voice, hallucinations, loss of touch sensations, double vision, blindness, seizures, fainting, or vomiting during whole pregnancy.

TABLE 2. Frequency, Base Rates, Gender, and Age Effects of SOMS

Symptom	Base Rate	OR Women (95% CI)	OR Age >45 (95% CI)
Headache	19%	1.65 (1.31–2.08)	1.07 (0.85–1.34)
Abdominal pain	11%	1.41 (1.05–1.89)	1.14 (0.85–1.51)
Back pain	30%	1.33 (1.09–1.62)	2.31 (1.89–2.83)
Joint pain	25%	1.34 (1.08–1.66)	4.41 (3.54–5.62)
Pain in legs and/or arms	20%	1.49 (1.19–1.88)	3.66 (2.82–4.76)
Chest pain	5%	0.76 (0.51–1.13)	2.22 (1.41–3.51)
Rectal pain	2%	1.24 (0.61–2.51)	1.34 (0.65–2.73)
Pain during sexual intercourse	1%	5.46 (1.63–18.57)	0.57 (0.25–1.28)
Pain during urination	3%	0.66 (0.39–1.13)	3.66 (1.84–7.30)
Nausea	9%	1.61 (1.17–2.21)	0.96 (0.71–1.31)
Bloating	13%	1.03 (0.79–1.35)	1.72 (1.30–2.27)
Discomfort around the precordium	7%	1.16 (0.81–1.64)	1.17 (0.82–1.66)
Vomiting (pregnancy excluded)	2%	1.27 (0.71–2.26)	0.59 (0.33–1.04)
Regurgitation of food	8%	1.14 (0.82–1.58)	2.12 (1.47–3.04)
Hiccough, or burning sensations in chest or stomach	7%	1.05 (0.75–1.46)	1.74 (1.22–2.48)
Intolerance of food	12%	1.16 (0.89–1.52)	2.18 (1.63–2.92)
Loss of appetite	7%	1.35 (0.95–1.92)	1.41 (0.99–2.01)
Bad taste in mouth, or excessively coated tongue	5%	0.98 (0.65–1.46)	1.40 (0.92–2.12)
Dry mouth	8%	1.12 (0.81–1.55)	1.86 (1.31–2.65)
Frequent diarrhea	3%	0.87 (0.51–1.48)	1.90 (1.06–3.42)
Discharge of fluid from anus	1%	0.81 (0.30–2.16)	1.64 (0.57–4.76)
Frequent urination	9%	0.83 (0.61–1.14)	3.85 (2.58–5.75)
Frequent bowel movements	3%	1.07 (0.63–1.83)	1.37 (0.78–2.39)
Palpitation	11%	1.67 (1.24–2.24)	3.75 (2.64–5.32)
Stomach discomfort or churning feeling in the stomach	11%	1.34 (1.01–1.80)	3.50 (2.48–4.93)
Sweating (hot or cold)	9%	1.60 (1.17–2.18)	2.28 (1.63–3.18)
Flushing or blushing	9%	3.40 (2.33–4.95)	2.56 (1.80–3.66)
Breathlessness (without exertion)	6%	1.17 (0.81–1.76)	3.57 (2.20–5.78)
Painful breathing or hyperventilation	5%	1.35 (0.88–2.07)	2.76 (1.69–4.52)
Excessive tiredness or mild exertion	8%	1.77 (1.26–2.48)	2.91 (2.00–4.22)
Blotchiness or discolouration of the skin	4%	1.27 (0.81–1.99)	1.95 (1.20–3.16)
Sexual indifference	11%	1.47 (1.10–1.95)	2.96 (2.14–4.08)
Unpleasant sensations in or around the genitals	2%	2.03 (1.08–3.80)	1.23 (0.69–2.21)
Impaired coordination or balance	5%	1.48 (0.96–2.28)	2.61 (1.60–4.24)
Paralysis or localized weakness	2%	1.13 (0.61–2.08)	1.77 (0.92–3.41)
Difficulty swallowing or lump in throat	3%	1.31 (0.75–2.26)	0.70 (0.41–1.20)
Loss of voice	2%	1.34 (0.72–2.51)	0.96 (0.57–1.77)
Urinary retention	3%	0.43 (0.25–0.75)	4.27 (2.09–8.70)
Hallucinations	2%	1.17 (0.58–2.39)	1.27 (0.62–2.61)
Loss of touch or pain sensations	1%	2.83 (1.04–7.69)	2.70 (0.99–7.35)
Unpleasant numbness or tingling sensations	5%	1.48 (0.99–2.22)	1.66 (1.10–2.51)
Double vision	2%	0.58 (0.29–1.12)	1.93 (0.92–4.03)
Blindness	1%	0.69 (0.21–2.27)	3.34 (0.72–15.63)
Deafness	3%	0.74 (0.45–1.22)	15.87 (4.98–50.0)
Seizures	2%	1.21 (0.67–2.18)	2.02 (1.06–3.85)
Amnesia (loss of memory)	3%	0.71 (0.43–1.18)	8.93 (3.58–22.22)
Loss of consciousness	1%	1.07 (0.37–3.10)	1.36 (0.45–4.08)
Painful menstruation	9%		
Irregular menstruation	8%		
Excessive menstrual bleeding	4%		
Continuous vomiting during pregnancy	1%		
Unusual or copious vaginal discharge	3%		0.47 (0.24–0.95)
Erectile or ejaculatory dysfunction	6%		9.26 (3.30–25.64)

Note: Odds Ratios (ORs) are significant (denoted by boldface type) if the confidence interval (CI) does not include 1.0. Significant OR >2.0 or <0.5 are highlighted. Items regarding menstruation were not analyzed for age and gender effects because of menopause.

Table 2 also presents those physical symptoms that showed differences between men and women. Base rates differed significantly for 16 of 47 physical symptoms between men and women. All items with significant gender effects had higher base rates for women than for men, except for urinary retention (OR for women 0.43). The most pronounced effects were found for pain during sexual intercourse (OR for women 5.5), flushing (OR for women 3.4), loss of sensation (OR for women 2.8), and unpleasant genital sensations (OR for women 2.0).

To analyze the age effects, the sample was divided into two age categories (>45 years and ≤ 45 years). Twenty-nine of 49 items showed significant age effects, most of them indicating higher rates for older people (such as deafness, erectile dysfunction, loss of memory, joint pain, pain in extremities, palpitation, or urological problems).

The dichotomized method of analyzing the data provides a quick overview, but complex interactions remain undetected. This can be demonstrated with the example of abdominal pain. Abdominal pain was found to be one of the most frequent symptoms, with higher rates for women (Table 1). However, sex differences mainly occurred in persons less 45 years old (Figure 1). Moreover, in both gender groups there was a decline of the frequency of abdominal pain from the age group 46 to 55 years to the age group 56 to 65 years. However, the dichotomous age variable did not show significant odds ratios because of the increase of the frequency in persons in the age group who were more than 75 years old.

Frequency of Hypochondriacal Features

Item 64 of the SOMS checks for the core feature of hypochondriasis (Table 3). Ten percent of the total sample reported health anxiety or the conviction to have a serious illness, despite the absence of a medical

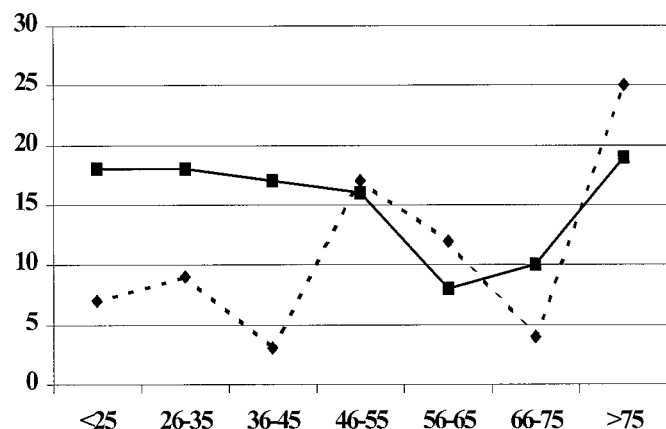


Fig. 1. Percentage of abdominal pain in men (◆) and women (■).

explanation. The gender difference was small (11% in women and 8% in men), yet, health anxiety increased significantly with age (OR = 2.6).

Table 3 presents the base rates for the items of the WI. Twelve of 14 WI items were significantly age dependent, all of them indicating higher scores for older persons. Nine items were gender dependent, with higher scores for women. However, the gender differences were not as pronounced as those for somatization symptoms; only one variable (item 9) had an odds ratio of above 2.

Using the SOMS, subjects with health anxiety were screened also for the duration of the symptoms. A total of 84% of all persons who indicated severe health anxiety reported that the anxiety persisted longer than 6 months. Thus, for most, health anxiety was a chronic state.

Total Scores for Somatization and Hypochondriasis

People reported a mean score of 3.35 unexplained symptoms for the last 2 years. From the list of symptoms relevant for DSM-IV somatization disorder, two complaints were typical for the general population (1.8 for men and 2.3 for women). Table 4 demonstrates that all somatization and hypochondriasis scores were age and gender dependent. However, the effects for age were constantly higher than the effects for gender. Age and gender effects were comparable for the sum scores of the symptom lists of DSM-IV somatization disorder, ICD-10 somatization disorder, and ICD-10 SAD.

Frequency of Somatization Syndromes in the General Population

The self-ratings can be used for estimations of the frequency of somatization syndromes. Although self-rating scales may reveal different base rates than interviews, the data allow the comparison of base rates of different somatization syndromes as well as the analysis of age and sex effects. Table 5 describes the frequency of somatization disorder when defined with the use of a self-rating scale. As expected, we found slightly higher rates for SD than those reported in the manual of DSM-IV. Although the range for women was higher than that for men, gender differences were less pronounced than had been assumed in DSM-IV. Moreover, gender differences were higher if the criteria for somatization were more exclusive: for somatization disorder, gender differences were about 1:4 (men to women), but for less strictly defined somatization syndromes (such as PSS), the gender differences were about 2:3.

If the somatization syndrome was defined by at least

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TABLE 3. Frequency of Hypochondriacal Features

Hypochondriacal Item	Base Rate (yes)	OR Women (95% CI)	OR Age >45 (95% CI)
Whiteley Index			
1. Do you often worry about the possibility that you have a serious illness?	17%	1.33 (1.04–1.68)	2.39 (1.85–3.09)
2. Are you bothered by many pains and aches?	11%	1.63 (1.22–2.19)	4.61 (3.19–6.66)
3. Do you find that you are often aware of various things happening in your body?	35%	1.20 (1.00–1.45)	1.34 (1.11–1.61)
4. Do you worry a lot about your health?	29%	1.36 (1.11–1.66)	2.55 (2.07–3.13)
5. Do you often have the symptoms of a very serious disease?	10%	1.16 (0.86–1.57)	2.82 (1.99–3.98)
6. If a disease is brought to your attention (through the radio, TV, newspaper, or someone you know) do you worry about getting it yourself?	21%	1.41 (1.14–1.76)	1.48 (1.19–1.85)
7. If you feel ill and someone tells you that you are looking better, do you become annoyed?	10%	1.37 (1.01–1.85)	0.98 (0.73–1.31)
8. Do you find that you are bothered by many different symptoms?	11%	1.54 (1.16–2.06)	3.61 (2.58–5.08)
9. Is it hard for you to forget about yourself and think about all sorts of other things?	7%	2.16 (1.50–3.13)	2.53 (1.73–3.72)
10. Is it hard for you to believe the doctor when he tells you there is nothing to worry about it?	16%	1.02 (0.81–1.30)	1.80 (1.40–2.31)
11. Do you get the feeling that people are not taking your illness seriously?	8%	1.68 (1.20–2.35)	1.32 (0.96–1.83)
12. Do you think that you worry about your health more than most people?	11%	1.20 (0.90–1.61)	1.64 (1.22–2.21)
13. Do you think there is something seriously wrong with your body?	15%	1.18 (0.91–1.52)	4.00 (2.95–5.43)
14. Are you afraid of illness?	4.3%	1.39 (1.16–1.66)	1.64 (1.37–1.97)
SOMS			
64. Are you afraid or are you convinced that you have a serious disease, although the physicians have failed to find a sufficient explanation for your complaints?	10%	1.48 (1.08–2.01)	2.60 (1.85–3.66)

Note: Odds Ratios (OR) are significant if the confidence interval (CI) does not include 1.0. Significant Odds Ratios (OR) above 2.0 or below 0.5 are in boldface type.

TABLE 4. Total Scores for Somatization and Hypochondriasis

Index	No. of Items	Mean	SD	Men	Women	Age ≤45	Age >45
Somatization Index (total)	53	3.4	4.7	2.9 (t = 3.0)**	3.7	2.4 (t = 9.4)***	4.1
Somatization index DSM-IV	33	2.1	2.8	1.8 (t = 3.8)***	2.3	1.6 (t = 7.4)***	2.5
Somatization Index ICD-10	14	1.1	1.7	1.0 (t = 2.2)*	1.2	0.8 (t = 7.7)***	1.4
SAD Index	12	1.1	1.8	0.9 (t = 3.0)**	1.2	0.7 (t = 9.1)***	1.4
Polysymptomatic somatization index	32	2.7	3.8	2.4 (t = 3.3)***	2.9	1.8 (t = 9.4)***	3.4
Whiteley Index	14	2.4	2.8	2.2 (t = 3.8)***	2.7	1.8 (t = 9.4)***	3.0

Note: The “Men” column includes *t* scores for the gender effects, whereas the “age ≤ 45” column includes *t* scores for age effects. * *p* < .05, ** *p* < .01, *** *p* < .001.

TABLE 5. Frequency of Somatization Syndromes (According to Self-ratings)

Syndrome	Frequency Total (%)	Frequency for Men (%)	Frequency for Women (%)	Frequency (%) for Age ≤45	Frequency (%) for Age >45
Somatization Disorder DSM-IV	0.3 (n = 7)	0.1 (n = 1)	0.5 (n = 6)	0.8 (n = 7)	0
Somatization Disorder ICD-10	0.3 (n = 6)	0.1 (n = 1)	0.4 (n = 5)	0.2 (n = 2)	0.4 (n = 4)
Somatic Symptom Index SSI-3/5	23.6 (n = 484)	30.1 (n = 272)	18.5 (n = 212)	15.6 (n = 142)	30.1 (n = 342)
Polysymptomatic Somatization Disorder	12.5 (n = 255)	9.8 (n = 88)	14.6 (n = 167)	7.4 (n = 67)	16.6 (n = 188)
Hypochondriacal Syndrome and Visits to the Doctor (According to SOMS)	7.0 (n = 142)	5.7 (n = 51)	8.0 (n = 91)	3.7 (n = 34)	9.5 (n = 108)

three symptoms for men and five symptoms for women (SSI-3/5), we found a much higher rate of 23.6% fulfilling the criteria. Because of the lower criteria for men than for women, such a liberally defined somatization syndrome was even more frequent in men than in women. If we apply the SSI-4/6 criteria to the DSM-IV somatization disorder symptom list, this

would lead to a base rate of 16%, again revealing higher rates for men (19% men, 13% women).

DISCUSSION

Our study presents base rates for unexplained physical symptoms as well as for the frequently used self-

rating scale, the Whiteley Index. We demonstrated that persons with multiple unexplained physical symptoms are very common in the general population. Therefore, our data support the results of Kroenke et al. (2), who found that somatoform symptoms were frequent and that about 8% of primary care patients fulfill the criteria for "multisomatoform disorder," but most of these patients did not fulfill the criteria of the diagnosis of somatization disorder.

Fahrenberg (11) pointed out that the accumulation of physical symptoms to form somatization scores as proposed from the classification systems DSM and ICD-10 is questionable. Such a procedure assumes that the single symptoms have comparable frequency and little influence due to age and gender. However, the single symptoms of the symptom lists differ greatly in terms of base rates, age, and gender of the subjects, as our results demonstrate. Even in clinical high-risk samples, the base rates of some symptoms relevant to the classification were extremely low (5).

The so-defined somatization features are associated with aspects of illness behavior. Eighty-one percent of all persons reporting at least one unexplained physical symptom also confirmed that they visited doctors because of these complaints during the previous 2 years. Therefore, the health care relevance may be better reflected by somatization syndromes than from people fulfilling all criteria for somatization disorder or hypochondriasis. The question arises why 19% reported physically unexplained symptoms but had no doctor visits during the previous 2 years. Either they got the information that these symptoms are medically "unfounded" long ago, or some of these answers were artifacts.

Gender differences are a well-known factor for somatoform symptoms. Our data confirmed gender effects for about one third of the physical complaints, with the most pronounced effects for pain during sexual intercourse, flushing, loss of touch sensations, urinary retention, and unpleasant sensations around the genitals. Urinary retention was the only symptom that was more frequent in men. However, the extreme asymmetric gender rates quoted from DSM-IV for somatization disorder (93% to 7%) could not be confirmed. In a worldwide study, Gureje et al. (12) found sex ratios of 2:3 to 1:3 for somatization disorder according to ICD-10. For abridged somatization, gender asymmetries were lower. Also, Escobar et al. (3, 13) found asymmetric gender ratios for somatization syndrome, but, again, these were less pronounced than those for somatization disorder as suggested in DSM-IV. Therefore, they proposed different criteria for men and women (a minimum of 4 vs 6 symptoms). However, this correction factor led to higher base rates in

men than in women in our data; a disconcerting observation, considering higher base rates for most single symptoms in women than in men. Moreover, our estimates for the base rates of an SSI-3/5 criterion were 23.6%, which may be falsely inflated. Our empirically derived approach of using a "polysymptomatic somatoform disorder" (5) received base rates of 12%, which may be a better compromise.

Kroenke and Spitzer (14) found that depressive and anxiety disorders may be strong correlates of symptom reporting but that gender had an independent effect that persisted even after adjusting for psychiatric comorbidity. This result indicates that gender differences in the reporting of physical and somatoform symptoms could not be completely explained by comorbidity with other mental disorders but are a genuine correlate of somatoform symptoms.

Eminson et al. (15) found that these sex differences for single symptoms develop as early as childhood. However, the origin of sex differences in physical symptoms remains unclear. Gijsbers van Wijk and Kolk (6) described various approaches for the explanation of the phenomenon. Physiological processes, the selection of information through attention and distraction, attribution of somatic sensations, negative affectivity, and personality factors may be only some of them.

Single somatization symptoms, somatization syndromes, and single hypochondriacal features were more frequent in older people. Consequently, somatization and hypochondriasis total scores are also higher in older people. This is a confirmation of the results of Escobar et al. (3) and Kroenke and Price (16), who found increasing rates for somatization symptoms with increasing age, as well as the results of Noyes et al. (17), who found correlations of age with illness fears. However, studies that investigated outpatients (14, 18) or inpatients (19) could not confirm the association of age with symptom frequency. Therefore, this effect seems to be sample dependent. Although older persons of the general population seem to have more physical symptoms and more health anxiety, they do not necessarily seek more medical care (20).

For hypochondriasis, valid data on base rates in the general population are rare. Some authors expect a frequency of about 1%. However, subsyndromal versions of hypochondriasis may be more frequent. Our results revealed that 10% of the population confirmed to be afraid of or to have the conviction of having a serious disease. Gureje et al. (21) described that patients with abridged versions of hypochondriasis were comparable with patients who fulfilled the complete criteria for hypochondriasis in terms of impairment. Despite higher base rates for hypochondriacal fears in

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women, gender differences were minimal. Health anxiety was strongly age dependent, with higher scores in older people.

The base rates for single items of the WI confirm the high frequency of hypochondriacal fears and convictions. Robbins and Kirmayer (22) pointed out that "norms for the level of worrying that is appropriate for a given severity of illness do not exist." Therefore, the consideration of base rates of the general population, as presented in this article, is important for the interpretation of results for clinical groups. Speckens et al. (23) suggested a minimum score of five or higher in the WI as an optimum concerning sensitivity and specificity in the definition of hypochondriasis. Nineteen percent of our sample fulfills this criterion. In an analysis that differentiated hypochondriacal patients from patients with other mental disorders, we proposed a somewhat higher cut-off score of eight points in the Whiteley Index, because the distinction between clinical groups is much more difficult than that between hypochondriacal and healthy controls (9). This more restrictive criterion of a Whiteley Index of eight or more is fulfilled by 8.3% of our sample.

For hypochondriacal features, gender differences seem to be less pronounced than those for somatization are. Speckens et al. (23) did not find associations of age and gender with hypochondriacal features. In our larger sample, we found such associations, but gender effects were much lower than age effects. However, when interpreting data of the WI, age and sex distribution of the sample should be considered.

Our study has some shortcomings. Our focus was on self-rating scales and not on psychiatric interviews. Self-reports usually find higher rates than clinical opinion (1). Moreover, some persons may have problems in rating whether symptoms were sufficiently accountable for by medical explanations, as well as in rating other inclusion and exclusion criteria. The strong association of symptom reporting and visits to the doctor confirmed that the symptoms were severe and that doctors have assessed them in most cases (81%). However, it remains unclear whether physicians have explained the results of the examinations completely to the patients and whether patients have accepted and recalled the doctors' opinions correctly. The rating that physical complaints are "unfounded" is one of the major unsolved problems in somatoform disorders research. Therefore, results of studies on somatoform disorders can only be interpreted by considering how the problem was handled. In our study, the focus was on patients' ratings. Usually this implies a tendency to lower base rates of somatoform symptoms, because patients have a bias to interpret symptoms as

physically founded. However, more research is needed on this difficult topic.

Another shortcoming of our study is that we did not consider cultural aspects. Culture may have strong influences on the perception, interpretation, and consequences of somatic symptoms, as Kirmayer and Young (24) have pointed out. Whereas somatization occurs in all cultures, the interpretative framework may vary. Somatic symptoms may be an index of disease, an idiomatic expression of distress, or a form of social protest, etc (24). Therefore, it is important to consider the cultural background of our sample for the interpretation of results. In our study, we have examined a culturally homogeneous group of white, German-speaking, "western-culture" persons. For the interpretation of our data, remember that Germany has a highly developed social security system and a high availability of medical clinics and paramedical treatment. The attitudes toward the health care system are only moderately positive (59% of Germans agree with the statement that the German health care system is satisfactory), and the most feared illnesses are cancer, bovine spongiform encephalopathy, AIDS, and cardiovascular diseases (25). All these aspects can influence the reporting of symptoms.

In sum, however, our data may present new insights in base rates, gender differences, and age effects of physical symptoms in the general population. Such data may be one important aspect in the development of empirically based criteria for the classification of patients with hypochondriacal and somatization features. However, additional developments of classification criteria for somatoform symptoms should not only consider physical symptoms but also other aspects of the disorder (11).

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