The Relationship between Illness Behavior and Health Expenses of Patients with Multiple Somatoform Syndrome in General Practice

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Abstract: *Objectives: To compare the behavioral characteristics of patients with somatoform syndrome and control group, measured by means of Scale of Assessment of Illness Behavior, as well as direct and indirect health expenses of these patients. Methods: the served consecutive patients in 13 general practices were investigated by means of standardized methodic – SOMS, following clinical interview and Scale of Assessment of Illness Behavior. Using the data of patients medical records the following indexes have been studied an year before this research: number of visits to GP; number of visits to medical specialists in outpatient care; number of hospitalizations; visits in emergency center; days out of work; psychiatric consultations; laboratory and medico – diagnostic investigations. The software package for statistical processing SPSS 17.0. was used. Results: The levels of abnormal behavior in patients with somatization syndrome are statistically higher than these in control group. The number of visits of patients with multisomatoform syndrome to medical specialists in outpatient care significantly overweight the number of visits in control group. The hospitalizations of patients in investigated group significantly overweight the hospitalizations in control group. The relation between the number of visits to GPs in target group compared with control group is 3:1. One third /25%/ of nonsomatizing patients and 84% of somatizing use laboratory and medico-diagnostic investigations. Conclusions: The higher levels of abnormal behavior correlates with higher levels of health-related expenses. The somatizing patients with more reported medically unexplained symptoms show bigger tendency to abnormal illness behavior. It seems that the number of reported symptoms has a predictive value regarding health expenses.*

Keywords: somatization, Illness behavior, health expenses

1. Introduction

The term "illness behavior" is introduced initially by Mechanic D in 1972 (4). It includes behavioral aspects such as; use of health resources, insisting on undertaking different clinical tests, taking medications, days of temporary disability , avoiding physical activities, urgently sharing of symptoms with family or the significant others. Pilowsky I (5,6) introduces the term "pathological illness behavior" in an attempt to summarize the behavioral aspects, which contribute to the maintenance of the disease.

Research indicates, that illness behavior correlates with various personal and social factors. Anxiety and depression have great significance in the contribution to this behavior, not only on their own, but also in combination with other somatic disorders. (11, 12).

Bodily symptoms are another important determinant. Patients with somatoform syndrome (multiple somatic symptoms that have no physical cause) tend to interpret bodily sensations as troubling which in turn brings up concerns about ones' health, reinforcing the illness behavior. They represent a significant proportion of patients with higher than normal direct and indirect health costs. J. Escobar et all.(14); G. Smith (17); J. Shaw & F. Creed (8), W. Hiller (2003). These are the patients who usually seek health care most often. There is evidence that 91% of the total funds paid for patients with somatization disorder is not spent on mental health services (18). Frequent visits to physicians, constant switching of specialists, numerous unnecessary and useless laboratory tests, hospitalizations and surgical interventions form the high costs of "treating" this group of patients.

Aim
The aim of this research was to compare behavioral characteristics of primary care patients with somatoform syndrome and control group.

Questions to be answered:
- How illness behavior of multiple somatoform syndrome patients correlates with health care costs?
- Is there a correlation between number of symptoms and illness behavior of patients with multiple somatoform syndrome?
- Do gender and age influence manifestations of illness behavior in a particular way?

2. Methods

The software package for statistical processing SPSS 17.0. was used. The data were presented graphically. To determine the distribution of the data we used tests Kolmogorov-Smirnov and Shapiro-Wilk. Non- normally distributed data were compared with the nonparametric Mann-Whitney test and Wilcoxon test (partly independent samples without common factors) with correction of assurance test by Monte Carlo, respectively, by exact test.

We studied patients from 13 GP practices in Pleven municipality using the self-scoring instrument SOMS

(Screening of Somatoform Symptoms, W. Rief et all., 2001). There were 816 patients between 18-65 years of age that were visiting their GPs for different reasons. Exclusion criteria includes diagnosed mood disorders, anxiety disorders or schizophrenia. Out of 608 patients who did the test, 323 (53, 28%) had at least one of all 53 symptoms in the last 24 months. 216 patients (35,52%) had 3 or more of those medically unexplained symptoms. 8 patients (1,31%) scored positively on the somatization index (8). 58 of them (9,53%) covered criteria of Somatoform autonomic dysfunction index (W. Rief et all., 2001). These 66 patients dropped from the study . The remaining 150 (24, 67%) patients – 45 (7,4%) males and 105 (17, 26%) females – gave at least 3 positive answers for the presence of medically unexplained symptoms for the past 6 months.

In a subsequent clinical interview based on research criteria of DSM-IV, 14 (2, 30%) patients covered criteria for hypochondriasis (5 male and 9 female) ; 6 patients (0,98%) covered criteria for somatoform pain disorder (1 male and 5 female); in 4 (0,65%) of the patients was verified body dysmorphic disorder (4 female). After exclusion of those 24 patients, a group of 126 patients was formed. All of them met the criteria for somatoform disorder (8). Of all 284 non-somatizing patients 142 were assigned to the control group according to age, sex and level of education.

During the clinical interview along with other instruments was used SAIB *(Scale for the assessment of illness behavior).* The tool consists of 25 one to four Likert scale questions.

The first dimension of this scale covers aspects of "verification of diagnosis" - tendency to insist on numerous tests and visits to various doctors; questions 1, 2, 3, 4, 5. The second dimension reflects aspects of the "disease expression" – the tendency to share symptoms urgently with relatives and other important people; questions 6, 7, 8, 9, 10, 11. The third dimension is associated with "medication and treatment" - the tendency among some patients to have excessive confidence in the pharmacological treatment and to surround themselves with drugs; questions 12, 13, 14, 15, 16. The fourth dimension is "secondary gain of illness"; questions 17, 18, 19, 20, 21. A special focus here is the inability to concentrate during work. The last dimension is "body scan" - the tendency to focus one's attention on the functioning of his/her body; questions 22,23,24,25. For each dimension and total sum of all dimensions, high scoring means a lower degree of disease behavior, and vice versa.

According to the medical records of patients from both groups - experimental and control- the following indicators were considered (for the previous 12 months prior to study entry): number of visits to GP; number of visits to outpatient care; number of hospitalizations; visits in emergency rooms; days of temporary disability to work; consultations with psychiatrist; laboratory tests; other diagnostic procedures. In analyzing the results on the use of health resources using the U statistics of Mann-Whitney for two samples with unequal volumes. We used this test because of its specificity to the studied variables and its greater sensitivity and power both in terms of central tendency of distribution as well as in terms of the shape of the distribution.

On the other hand, it enables us to define in a more general way the null hypothesis: there is no difference between the measurement of the populations from which both samples were derived. In analyzing the results on the use of medical diagnostic tests we used alternative analysis by comparing indicators for relative share for each of the variables using t-test. We used this test due to the nature of the studied variables that may or may not be available.

3. Results

Table 1 presents the results of applying the SAIB in patients with multiple somatoform syndrome and control of the four dimensions of the scale. Analysis of variance was used to compare the averages for each of the dimensions and the grand total for SAIB.

Table 1: Comparative analysis of the results of illness behavior in patients with somatoform syndrome and control group

Variables	Control -142 patients	MSS-126 patients	p
	mean/standard deviation	mean/standard deviation	
1.SAIB-verification of diagnosis	3,04/0,61/	2,61/0,68/	$P<0,001$
2.SAIB-illness expression	2,92/0,52/	2,65/0,55/	$P<0,001$
3.SAIB-medication and treatment	2,79/0,61/	2,49/0,65/	$P<0,001$
4.SAIB-secondary gain of illness	2,90/0,51/	2,51/0,54/	$P<0,001$
5. SAIB-body scan	2,68/0,61/	2,31/0,70/	$P<0,001$
6. Total score of SAIB	2,93/0,48/	2,59/0,48/	$P<0,001$

In analyzing the results of the application of SAIB by age, patients with somatoform syndrome were divided into two groups: under 40 years of age - 83 patients; and over 40 years of age - 43 patients. Variance analysis was also used and the results are presented in Table 2.

Table 2: Comparative analysis of the results of illness behavior in patients with somatoform syndrome according to age

Variables	over 40 years of age-83 patients	Under 40 years of age-43 patients	p
	mean/standard deviation	mean/standard deviation	
1.SAIB-verification of diagnosis	2,43/0,67/	2,56/0,56/	$P<0,001$
2.SAIB-illness expression	2,55/0,56/	2,61/0,53/	$P<0,001$
3.SAIB-medication and treatment	2,49/0,65/	2,58/0,47/	$P<0,001$
4.SAIB-secondary gain of illness	2,46/0,54/	2,53/0,55/	$P<0,001$
5. SAIB-body scan	2,39/0,70/	2,47/0,64/	$P<0,001$
6. Total score of SAIB	2,53/0,48/	2,60/0,57/	$P<0,001$

Table 3 presents the results of application of SAIB in order to seeking gender specific behavior of the disease in patients

with somatoform syndrome analyzed by analysis of variance.

Table 3: Comparative analysis of illness behavior in patients with somatoform syndrome divided by gender

Variables	Female-87 patients	Male-39 patients	p
	mean/standard deviation	mean/standard deviation	
1.SAIB-verification of diagnosis	2,41/0,66/	2,62/0,68/	$P<0,001$
2.SAIB-illness expression	2,45/0,54/	2,58/0,56/	$P<0,001$
3.SAIB-medication and treatment	2,48/0,59/	2,63/0,67/	$P<0,001$
4.SAIB-secondary gain of illness	2,49/0,52/	2,57/0,70/	$P<0,001$
5. SAIB-body scan	2,33/0,61/	2,46/0,63/	$P<0,001$
6. Total score of SAIB	2,53/0,58/	2,60/0,62/	$P<0,001$

We made an attempt to find a link between the number of unexplained physical symptoms presented by patients and the average of illness behavior SAIB. The results are shown in Table 4.

Table 4: Results of applying Scale of illness behavior in patients with somatoform syndrome distributed according to the number of presented somatic symptoms.

	Group 1 /89 patients/ with 3 – 7 symptoms	Group 2 /37 patients/ with 8-11 symptoms	p
Mean /standard deviation/of SAIB	2,66/0,51/	2,52/0,49/	$P<0,001$

Using data from other studies on the subject, we applied analysis of variance to study the relationship between average SAIB in the number of patient visits to their GPs. For the purposes of this analysis, patients were divided into two groups: first, those with 1 to 4 visits and second-group, those with 5 to 7 visits. The results are presented in Table 5.

Table 5: Results of applying Scale of illness behavior in patients with somatoform syndrome distributed according to the number of visits to GPs

	Group 1 /94 patients/ with 1-4 visits to GP	Group 2 /32 patients/ with 5-7 visits to GP	p
Mean /standard deviation/ of SAIB	2,62/0,52/	2,48/0,59/	$P<0,001$

Patients were also divided into two groups when we studied the relationship between illness behavior and disease days with temporary disability. The results are shown in Table 6.

Table 6: Results of applying Scale of illness behavior in patients with somatoform syndrome distributed according to the days of temporary disability for work

	Group 1 /79 patients/ with 3-7 days of temporary disability for work	Group 2 /47 patients with 7-19 days of temporary disability for work	p
Mean /standard deviation/ 3of SAIB	2,64/0,56/	2,51/0,70/	$P<0,001$

Table 7 presents a comparison of health resources used from patients with somatoform syndrome and controls.

Table 7: Use of health resources one year prior to the study

Variables	Multiple somatoform disorder /126/	Control group /142/	Mann-Whitney U-test
1.Number of visits to emergency rooms	11/0-3/	2/0-1/	$p<0,05$
2.Number of visits to out-patient care	133/1-5/	21/0-2/	$p<0,05$
3.Number of hospitalizations	19/0-3/	4/0-1/	$p<0,05$
4.Number of visits to psychiatrist	0	0	0
5.Number of visits to GP	402/1-7/	168/0-2/	$p<0,05$
6.Days of temporary disability for work	592/3-19/	213/0-7/	$p<0,05$

Year before the study there were 11 visits to the emergency room from the studied sample. From those 11, three were made by one patient with symptoms of palpitations, pain and discomfort in the chest without evidence of somatic reason. Patients with somatoform syndrome visit more often outpatient health care compared to those in the control group / 133 to 21/.

Patients from the experimental group were hospitalized more often than those in the control group. They are carried out exclusively on the occasion of symptoms of pain and palpitations, headaches and dizziness, and "paralysis" on the limb, abdominal pain, shortness of breath.

Patients with somatoform syndrome attend GPs three times more often than patients in the control group. Particularly impressive finding is that none of the patients from the experimental group was directed to specialized psychiatric care. It turns out that those patients are absent from work due to illness more than 2.5 times than the controls (592 days of temporary disability in the experimental group versus 213 in the control).

The data for the laboratory tests and other diagnostic procedures are presented in table 8.

Table 8: Comparison of tests and other diagnostic procedures conducted 12 months prior to the study, in patients with somatoform syndrome and controls

Medical tests	Multiple somatoform disorder /126/	Control group /142/	t-test *p*
1. complete blood count	113	37	t=13,8 *p<0,05*
2. urine test	103	31	t=12,2 *p<0,05*
3. liver enzymes	69	17	t=7,6 *p<0,05*
4. urea, uric acid, creatinine and electrolytes	72	21	t=8 *p<0,05*
5. glucose, triglycerides and cholesterol	76	22	t=8,4 *p<0,05*
6. albumin and total serum protein	67	19	t=7,5 *p<0,05*
7. electrocardiography	62	18	t=6,9 *p<0,05*
8. electroencephalography	6	0	t=2,5 *p<0,05*
9. ultrasound diagnosis	29	7	t=4,3 *p<0,05*
10. radiographic studies	57	16	t=6,5 *p<0,05*
11.computerized axial tomography	23	3	t=4,4 *p<0,05*

4. Discussion

Disease behavior is not homogeneous structure. Usually it is associated with increased use of health resources. To be understood in greater depth, it is necessary to take into account other characteristics that are important aspects of the way in which people cope with this disease. At the same time, all aspects of the disease behavior can be strictly individual.

These are the reasons why we used rating scale for morbid behavior reflecting aspects such as verification of diagnosis, illness expression, medication and treatment, consequences of illness, disease scanning and data from another survey of ours on the use of health resource in patients with multiple somatoform syndrome.

We analyzed the results of SAIB application in our study using statistical analysis of variance. The null hypothesis we tested was: there is no difference between disease behavior of patients with multiple somatoform syndrome and healthy individuals as measured in total scale as well as its various dimensions. The level of significance of this hypothesis proved to be less than 0.01 in each dimension of the scale as well as a general assessment, which led us to accept the alternative, that patients with multiple somatoform syndrome showed a statistically significant higher level of illness behavior measured by SAIB. This result is similar to the results of W.Rief 2005 (10), however, he compared the illness behavior among patients with panic disorder, depression, somatizing patients and controls. Somatizing patients in this study were assessed by PHQ / Patient Health Questionnaire /, whose screening value is different from that of SOMS.

In search of age and gender specifics of illness behavior in patients with multiple somatoform syndrome we used once again variation analysis and null hypothesis: there is no difference in the degree of illness behavior in different age groups in both sexes. The significance of this hypothesis, proved to be less than 0.01 in each dimension as well as in general assessment, which let us to assume the alternative: older age and female sex are associated with a statistically significant higher levels of illness behavior. These results match with those of W.Rief study, only in the dimension "older age" but differ in the "sex" dimension. It detects gender specificity in "medication and treatment" dimension, which showed a statistically significant higher level of illness behavior in women. In his research, however, unlike us, he used regression analysis and his sample was picked up from specialized clinics.

We used data from another research of ours on the use of health resources by patients with multiple somatoform syndrome to compare illness behavior in this group of patients assigned according to the number of presented body-unexplained symptoms, number of visits to the GP and days of temporary disability. We used analysis of variance to test the null hypothesis which was: there is no difference in the degree of illness behavior in patients with different number of somatic symptoms, different number of visits to GPs and a different number of days with temporary disability. The significance of this hypothesis, proved to be less than 0.01 for each of the variables, that is why we assumed the following alternative: patients with a greater number of somatic symptoms, greater number of visits to GPs and greater number of days of temporary disability have higher levels of illness behavior measured by SAIB.

The results of our study arose the following question: assuming there is link between illness behavior of patients with a body-unexplained symptoms and consumption of health resources what is the link between primary pathology / bodily symptom / and illness behavior? The answer to that seems to be obvious: the cognitive style of these patients. Is there something specific in this cognitive style, which can be drawn from this study?

The scale for the assessment of disease behavior, has several dimensions: verification of diagnosis, illness expression, medication and treatment, consequences of the illness, body scans. All of them reflect cognitive style known as "somatic illness attribution" - the conviction of these patients that behind their symptoms lies somatic disease. Verification of diagnosis and illness expression are associated, according to our assumption, not only with somatic illness attribution, but also with their ideas of being fragile, weak and unable to tolerate stress. Attributing the symptoms as a result of "vulnerability" may be related to the manner in which they perceive the effects of this illness. We think that the need for medication and the tendency to scan the body also reflect attribution of illness significance of symptoms experienced by these patients. Scanning of the body can be one of the most important factors in the development and maintenance of symptoms in the course and outcome of the illness.

The study of illness behavior is essential for any health system especially in periods of severe financial restrictions.

In the available literature we found no study focused on illness behavior of patients with multiple somatoform syndrome measured by self-report instrument and subsequent clinical interview which we consider to be a strong point of this study. Studies of W.Rief (9, 10) use only self-report instruments. The results of this study give a reason to think about further study of cognitive style of these patients as a mediator between the primary pathology and illness behavior.

In analyzing the results on the use of health resources (visits to the emergency rooms, visits to the GPs and days of temporary disability) we formulated the following null hypothesis: we assumed that there is no difference between the measurements of populations with respect to the mentioned variables. The results showed statistical significance degree of p <0,005 for each variable, which proves that somatizing patients used significantly more health resources than nonsomatizing patients.

After the analysis of results of laboratory tests and other diagnostic procedures, we formulated null hypothesis: there is no significant difference regarding the studied parameters between the two groups of patients, which also was not confirmed. Obviously there are naturally acting factors influencing both general (mis) use of health resources and excessive exposure of somatizing patients to various medical tests and procedures.

Most research projects studying the use of healthcare resources from patients with somatoform disorders use data acquired by clinical interview. There are very few studies on objective data from patients' medical records and social institutions. We think, that in terms of the reform in Bulgaria, the using information is complex and difficult process. Therefore, in this study we relied on information from patients' records and information from emergency rooms and have not used information reported by patients themselves. Completeness of the results is impaired due to the exclusion of direct costs from the purchase of drugs and visits to the dentist because of the lack of adequate information in the documentation of GPs. It is possible to have diagnostic errors and omissions due to inadequate assessment or due to early stages of an existing medical condition.

Despite these limitations, this study characterizes clearly enough the somatizing group of patients as a serious consumer of health resources and highlights the need for further development of procedures, training for GPs and specialists and more interventions in this population.

5. Conclusions

1) Levels of illness behavior in patients with somatization syndrome are statistically significantly higher than in healthy controls.
2) Higher levels of illness behavior in patients with somatization syndrome correlate with higher levels of consumption of health resources.
3) The number of reported somatic symptoms correlates positively with levels of illness behavior. It seems that the number of reported bodily-unexplained symptoms

have predictive value in terms of consumption of health resources.
4) Older age and female sex are associated with higher levels of illness behavior.
5) It is likely that the cognitive style of patients with somatization syndrome plays major role in somatic illness attribution as a link between bodily symptoms and illness behavior.
6) Direct and indirect health costs are significantly higher in patients with somatoform symptoms than in non-somatizing patients.
7) The group of patients with somatoform symptoms remains out of sight of psychiatrists.
8) Ignorance of somatoform disorders leads to: excessive frequent and varied consultations; many unnecessary and uninformative laboratory tests and other diagnostic procedures; a large number of hospitalizations.
9) It is necessary to educate GPs and non-psychiatric medical specialists and do systematic consultative work with them on issues of patients with bodily - unexplained symptoms with the ultimate aim of limiting excessive health care costs and control symptoms and suffering of patients in parallel with reduce inadequate iatrogenic and iatropathic impacts on them.

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