INITIAL INVESTIGATION OF SOMATIZATION IN THE GENERAL POPULATION OF SERBIA: PREVALENCE, MANIFESTATIONS AND PREDICTORS

INICIJALNO ISTRAŽIVANJE SOMATIZACIJE U SRPSKOJ OPŠTOJ POPULACIJI: PREVALENČIJA, MANIFESTACIJE I PREDIKTORI

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Summary

Introduction. Somatization is one of the most prevalent current health issues affecting the well-being and quality of life in the general population. Many psychological constructs influence somatization and its outcomes. It was our aim to assess the features and prevalence of somatization in general population of Serbia by using the Patient Health Questionnaire-15 instrument, as well as to determine its relations with personality traits, factors of psychological distress and well-being. Material and Methods. Two studies were performed: Study 1 (N = 714) aimed to determine the relations between the Big Five personality traits, alexithymia and somatization, and Study 2 (N = 807) investigated the relationship between factors of psychological distress such as depression, anxiety and stress, factors of well-being such as life satisfaction and subjective vitality with somatization. Results. In Study 1, Neuroticism and Toronto Alexithymia Scale-20 Factor 1, difficulty identifying feelings, strongly correlated with somatization, and the measured constructs explained 33.4% of somatization variance. In Study 2, anxiety and stress had the strongest correlation indices from the measured constructs and Study 2 regression model explained 44.7% of the variance. The most prevalent symptoms measured by the Patient Health Questionnaire-15 were back pain and headaches. Conclusion. Somatization levels were slightly higher than those previously reported in general population. However, they were still well under those reported in the clinical populations. Symptom prevalence was compatible with previous findings in the general population, whereas Neuroticism and anxiety were most closely associated with somatization. Further research is needed to define other factors that contribute to the development of somatization.

Key words: Somatoform Disorders; Affective Symptoms; Neuroticism; Anxiety; Mental Disorders; Personal Satisfaction; Personality; Signs and Symptoms; Surveys and Questionnaires

Original study

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Sažetak


Ključne reči: somatoformni poremećaji; afektivni simptomi; neuroticizam; anksioznost; mentalni poremećaji; lično zadovoljstvo; ličnost; znaci i simptomi; istraživanja i upitnici

Introduction

Somatization, presence of physical symptoms that lack a demonstrable organic basis, represents one of the major problems of today’s health care systems and it also leads to significant disruptions in daily functioning of individuals suffering from it [1]. An analysis of trends in European Union (EU) countries from 2011, which was focused on what authors classified as mental disorders, has shown that up to 38.9% of the population suffered from at least one of the 27 disorders which were the focus of the screening [2]. To further illustrate the problem, a recent study has shown that 63.1% of the population in Europe over the age 65 years reported having three or more somatoform disorders during their lifetime [3].
This report suggests that, at any time, about 20.4 million people in Europe suffer from some manifestations of somatoform disorders [2]. The screening has also shown that about one third of all patients that sought treatment from a medical practitioner did not receive an adequate explanation for their symptoms [4]. Another study showed that from 20% to 50% of patients in primary care seek help due to symptoms that can be characterized as medically unexplained [5]. Such somatoform disorders negatively influence comorbid psychiatric disorders, quality of life and cause functional impairment [6]. Measuring the level of somatization, primarily in the clinical populations, represents a diagnostic problem that is a focus of extensive research. The Patient Health Questionnaire-15 (PHQ-15) has been developed as a clinical tool to be used in the population of in- and out-patients. That is why it contains only 15 items covering 90% of complaints that patients usually have and 14 out of 15 most prevalent somatization disorders as defined by the Diagnostic and Statistical Manual (DSM) IV classification [7]. This scale has later been validated in the general populations [1] making it suitable for our research.

The subject of “medically unexplained symptoms” has been much researched because of its impact on patient care and well-being. A study has found that there is a great discrepancy in the incidence of these symptoms when examined from the perspective of patients and medical practitioners [8]. And also, there is a great variability between reported incidences [9]. While the PQH-15 scale has not been precisely designed to detect what should be considered “medically unexplained symptoms”, it was highly associated with determining the prevalence of somatic disorder symptoms [10, 11]. These symptoms fluctuate over the time [11] and can be attributed to a large number of causes such as meteoropathy [12].

Depression, anxiety and somatization are the most common mental health issues in primary care [13]. General practitioner is usually the first person from whom a patient with overlapping psychological and physical problems seeks help [14]. Looking into a large sample of outpatients with severe depression in primary care, one can notice that severe anxiety and high levels of somatization overlap to a great extent; depression and anxiety account for 49% of the somatization variance, while anxiety itself accounts for 35% of the variance in healthy but obese population [13, 15]. Anxiety and its association with somatization has specifically been a target of much research but it still receives less attention than depression in primary care settings [15]. Only between 15% and 36% of patients with anxiety disorders, such as general anxiety, social anxiety and panic disorder, are recognized by general practitioners [16].

In general and primary care populations, the correlation between somatization and depression has been reported to be one of the highest among all the measured constructs [17, 18], and the above mentioned research has entirely proven its importance in studying somatization. While specific forms of stress-related disorders, such as Post Traumatic Stress Disorder (PTSD) and their relation with somatization are thoroughly researched, we have found little data on the influence of stress, as part of general psychological distress, on somatization. In that respect, the use of the Depression Anxiety and Stress Scale (DASS)-21 questionnaire was the best for our study, because not only does it measure the levels of most common constructs related to somatization such as depression, stress and anxiety, but it is also a measure of general psychological distress [19]. Furthermore, all three constructs are shown to overlap with somatization in large populations [20]. Life satisfaction, as part of well-being, was found to correlate significantly with somatization and related constructs [1], and is therefore included in our research.

Other psychological constructs, apart from those pertaining to the concept of well-being, influence somatization. Personality traits also have a significant impact on the phenomenon in non-clinical and clinical populations, and are responsible for mediating outcomes in many illnesses designated as psychosomatic, especially Neuroticism, know also as emotional stability [21, 22]. Apart from the traditional Big Five personality traits, it has also been shown that alexithymia – inability to identify, perceive and value emotions – has a significant effect on the overall health of the population and treatment outcomes [22–24]. In light of this, we have decided to include this construct in our study of somatization.

The aim of this study was to determine the level and quality of somatization in the Serbian general population, as well as its relationship with factors of psychological distress, well-being and personality traits. Also, we determined the predictive value of these constructs on somatization levels.

Material and Methods

This investigation included two separate studies conducted from 2016 to 2017. Both surveys were web-based and the questionnaires were distributed on social media. The PHQ-15 questionnaire was used in both studies, along with different additional tests to gain greater insight into the relation between somatization and other constructs in the Serbian general population and to determine the predictive value of those constructs. Study 1 included 714 participants, 537 (75.2%) female, with a mean age of 29.61 (min = 18; max = 59). Study 2 included 807 participants, 585 (72.5%) of them were female, with a mean age of 27.73 years (min = 18; max = 66; SD = 7.01).

To determine the overall level and quality of life in somatization, we have summed up the results of the PHQ-15 instrument from both studies so that this extended sample could give us a more compre-
hensive understanding. The combined sample consisted of 1521 participants, 1122 (73.8%) of them were females, with a mean age of 28.61 years (min = 18; max = 66; SD = 7.23).

The PHQ-15 questionnaire has been developed as a clinical tool for measuring the level of somatization. Its items analyze symptoms or symptom clusters that account for more than 90% of physical complaints, except the upper respiratory tract, reported in the outpatient settings [7]. The translations of the questionnaire were further validated for the use in the primary care patients [25], and further validated for the use in the general population [26]. This instrument was used both in study 1 and 2 and in the combined sample.

The Toronto Alexithymia Scale [TAS-20] is one of the most commonly used instruments to measure levels of alexithymia. The scale was translated into Serbian [27] but after further validation of its factor structure, item 20 was removed in order to retain its original factor structure [24]. This instrument consists of 3 subscales; factor 1 – difficulty identifying feelings, factor 2 – difficulty describing feelings, and factor 3 – externally-oriented thinking. The instrument showed good internal consistency (α = .84) as a whole and at the level of subscales with expected shortcomings of the factor 3 subscale (α = .83; α = .82; α = .53). This instrument was used in Study 1.

The Big Five Inventory (BFI) contained 44 items because of its relative shortness and proven reliability. The Big Five personality traits are Extraversion, Agreeableness, Conscientiousness, Neuroticism and Openness, and alpha values for all subscales are .83, .74, .82, .84, .85, respectively. This instrument was used in Study 1.

DASS-21 questionnaire is a 21 item short form scale used for measuring levels of depression, stress and anxiety, being a general measure of psychological distress. The DASS-21 scale has been expertly translated into Serbian and the psychometric properties have proven to be satisfactory [28]. Internal consistency of depression, stress and anxiety subscales was high, α = .87, α = .81, α = .79, respectively. This instrument was used in Study 2.

Satisfaction with Life Scale (SWLS) is a measure of global life satisfaction. It measures life satisfaction compared to the participant’s own criteria and represents the cognitive element of subjective well-being [29]. The psychometric properties of the Serbian translation have been validated and proven satisfactory [30] and the scale’s internal consistency in our sample was good (α = .85). This instrument was used in Study 2.

Subjective Vitality Scale (SVS) was proposed [31] as a seven item self-report instrument. Later, its psychometric properties have been revised [32] and item 2 was eliminated. At present, both seven- and six-item versions are being used, although the six-item version is more prevalent in research, and this variation has therefore been used in our study. The internal consistency for the SVS was within acceptable margins (α = .82). This instrument was used in Study 1.

The gathered data were processed by using descriptive statistics, correlation and regression statistical methods. These operations were performed by using International Business Machines’ (IBM) Statistical Package for the Social Sciences (SPSS) software. All used instruments are in the public domain. The PHQ-15 questionnaire was translated by bilingual experts, and no permission is required for its usage and translation.

**Results**

The correlations between the measured constructs and somatization are represented by the PHQ-15 scores in Table 1. The multiple regression analysis was also performed. In the model, BFI personality traits and the general alexithymia scores were used as independent variables. After controlling for age, the model F we proposed explained 33.4% of the variance (7, 706) = 50.59, p < .001. Values for individual variables are also presented in Table 1.

The correlations between measured constructs and the PHQ-15 somatization scores in Study 2 are presented in Table 2. The regression model with these variables controlled for the participants’ age

<table>
<thead>
<tr>
<th>Table 1. Correlation coefficients between PHQ-15 score and other measured constructs in Study 1, and β values and significance of individual variables in the regression model</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Correlation with PHQ-15 score/Korelacija sa PHQ-15 skorom</strong></td>
</tr>
<tr>
<td>Factor 1/Faktor 1</td>
</tr>
<tr>
<td>Factor 2/Faktor 2</td>
</tr>
<tr>
<td>Factor 3/Faktor 3</td>
</tr>
<tr>
<td>TAS-20 score/TAS-20 skor</td>
</tr>
<tr>
<td>Extraversijon/Ekstraverzija</td>
</tr>
<tr>
<td>Agreeableness/Prijatnost</td>
</tr>
<tr>
<td>Conscientiousness/Savestnost</td>
</tr>
<tr>
<td>Neuroticism/Neuroticizam</td>
</tr>
<tr>
<td>Openness/Otvorenost</td>
</tr>
</tbody>
</table>

PHQ – Patient Health Questionnaire; TAS – Toronto Alexithymia Scale
Table 3. Distribution of participants by symptoms and their severity

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Not bothered at all (0 points) – N</th>
<th>Bothered a little (1 point) – N</th>
<th>Bothered a lot (2 points) – N</th>
<th>Mean score by symptom (0 - 2)/Prosečan skor po simptomu</th>
</tr>
</thead>
<tbody>
<tr>
<td>Feeling tired or having low energy/Feeling umora ili manjka energije</td>
<td>390 (25.6%)</td>
<td>827 (54.4%)</td>
<td>304 (20%)</td>
<td>.94</td>
</tr>
<tr>
<td>Back pain/Bolovi u leđima</td>
<td>537 (35.3%)</td>
<td>811 (53.3%)</td>
<td>173 (11.4%)</td>
<td>.76</td>
</tr>
<tr>
<td>Headaches/Glavobolja</td>
<td>637 (41.9%)</td>
<td>733 (48.2%)</td>
<td>151 (9.9%)</td>
<td>.68</td>
</tr>
<tr>
<td>Menstrual cramps or other problems with periods (Female participants only)/Menstrualni grčevi ili drugi problemi sa menstruacijom (samo za ispitanike ženskog pola)</td>
<td>360 (32.1%)</td>
<td>534 (47.6%)</td>
<td>228 (20.3%)</td>
<td>.88</td>
</tr>
<tr>
<td>Trouble sleeping/Problemi sa spavanjem</td>
<td>745 (49%)</td>
<td>537 (38%)</td>
<td>198 (13%)</td>
<td>.64</td>
</tr>
<tr>
<td>Nausea, gas or indigestion/Mučnina, nadutost ili žgaravica</td>
<td>744 (48.9%)</td>
<td>667 (43.9%)</td>
<td>110 (7.2%)</td>
<td>.58</td>
</tr>
<tr>
<td>Abdominal pain/Bolovi u stomaku</td>
<td>745 (48.9%)</td>
<td>684 (45%)</td>
<td>92 (6%)</td>
<td>.57</td>
</tr>
<tr>
<td>Pain in the arms, legs, or joints (knees, hips, etc.)/Bolovi u rukama, nogama i zglobovima (kolena, laktovi i sl.)</td>
<td>899 (59.1%)</td>
<td>543 (35.7%)</td>
<td>79 (5.2%)</td>
<td>.46</td>
</tr>
<tr>
<td>Constipation, loose bowels, or diarrhea/Zatvor, dijareja ili drugi problemi sa stolicom</td>
<td>929 (61.1%)</td>
<td>543 (35.7%)</td>
<td>90 (5.9%)</td>
<td>.45</td>
</tr>
<tr>
<td>Feeling your heart pound or race/Osećaj lupanja srca</td>
<td>1037 (68.2%)</td>
<td>426 (28%)</td>
<td>58 (3.8%)</td>
<td>.38</td>
</tr>
<tr>
<td>Shortness of breath/Osećaj da ostajete bez daha, da ne možete da nadišete</td>
<td>1152 (75.7%)</td>
<td>302 (19.9%)</td>
<td>67 (4.4%)</td>
<td>.29</td>
</tr>
<tr>
<td>Dizziness/Vrtoglavica</td>
<td>1134 (74.6%)</td>
<td>346 (22.7%)</td>
<td>41 (2.7%)</td>
<td>.28</td>
</tr>
<tr>
<td>Chest pain/Bolovi u grudima</td>
<td>1221 (80.3%)</td>
<td>267 (17.6%)</td>
<td>33 (2.2%)</td>
<td>.22</td>
</tr>
<tr>
<td>Pain or problems during sexual intercourse/Bol ili problemi tokom polnog odnosa</td>
<td>1292 (84.9%)</td>
<td>202 (13.3%)</td>
<td>27 (1.8%)</td>
<td>.17</td>
</tr>
<tr>
<td>Fainting spells/Povremeni gubitak svesti</td>
<td>1391 (91.5%)</td>
<td>202 (7.4%)</td>
<td>27 (1.8%)</td>
<td>.1</td>
</tr>
</tbody>
</table>
was also calculated. The model F we proposed in Study 2 explained 44.7% of the variance (6, 798) = 107.49, p < .001. Values for individual variables are also presented in Table 2.

**Combined Sample**

The average PHQ-15 score was 7.15 (min = 0; max = 24; SD = 4.38), 7.59 in females (min = 0; max = 24; SD = 4.46) and 5.91 in males (min = 0; max = 21; SD = 3.89). We found that score levels were significantly higher in female participants (p < .001). PHQ-15 score values were stratified into 4 groups. Minimal somatization, scores from 0 to 4, was detected in 455 (29.9%) participants. Low levels of somatization, 5 to 9 points, were detected in 675 (44.4%) of the participants. Medium and high levels of somatization, from 10 to 14 and from 15 to 30, were detected in 283 (18.6%) and 108 (7.1%) participants, respectively. Analysis of variance (ANOVA) test showed that there were no differences between age groups of examinees with somatoform disorders. The Chi square test showed that there was a statistically significant difference in gender distribution between somatization categories, c2 (3, n = 1521) = 45.48, p < .001, Cramer’s V = .173, p > .001, in favor of female participants being more distributed in higher somatization categories. There was a significant difference between genders in somatization levels in favor of female participants, but there was no significant correlation between participants’ age and somatization scores. The distribution of participants by symptoms and their severity is presented in Table 3.

**Discussion**

The main difficulty in interpreting the results is the lack of normative data for the Serbian population and differences between available normative data with regards to respective examined populations. There are two main groups of populations being examined in the literature—the general and the clinical population. The clinical population is then subdivided into primary care patients, psychiatric outpatients, represent a very diverse group. Our sample represents the cross-section of the Serbian society, irrespective of their current health status, in order to provide an insight into levels and quality of somatization and to determine pilot normative data.

Study 1 was conducted during 2016, while Study 2 was performed during 2017. The common denominator between these studies is the usage of the PHQ-15 questionnaire and the fact that they were both web-based surveys relying on participation of social network users. The PHQ-15 results of the two studies were combined to be used as a single sample. We believe that by doing this, we were able to provide a more complete overview of somatization in the Serbian population, and provide more accurate data representative of the population.

In Study 1, we attempted to determine the relationship between somatization measured by the PHQ-15 questionnaire and various personality determinants. We found an expected strong correlation between somatization and alexithymia [33], especially for factor 1 – difficulties identifying feelings. Surprisingly, factor 3, externally oriented thinking, showed no significant correlation. At present, we cannot explain this finding, so it should be a starting point for further research. Out of the Big Five personality traits, as expected, Neuroticism has the strongest correlation index with somatization [34]. Although we expected that Openness has a negligible correlation index with somatization, we were surprised by the fact that it contributed in a unique way to the Study 1 regression model and it accounts for 22% of the model variance. Personality traits explained 33.4% of the variance, but because we could not find corresponding data in the literature, we cannot compare our findings with other studies.

In Study 2, we examined the relationship of somatization with parameters of psychological well-being and distress. In our study we analyzed the correlation indices and created a regression model controlling the age of participants. Correlation levels between depression and somatization measured by the PHQ-15 vary to a great extent between available studies but they are always significant. In the general population, coefficients vary from .4 [17] to .75 [23], while a value of .72 was reported in the population of primary care patients [11]. Our results occupy the middle ground between reported values but given the large discrepancy in reported findings, a significant conclusion cannot be made.

We have a clearer picture when examining the relationship between anxiety and somatization. General population surveys report a .47 and .54 correlation index between anxiety and PHQ-15 scores [17, 10], while the correlation coefficient between these two constructs is .67 in the primary care patients population [11]. Correlation levels detected in Study 2 are closer to the clinical end of the spectrum. Different instruments were used to measure anxiety levels in the aforementioned studies and anxiety itself is a complex multifaceted phenomenon. Detection of elevated correlation coefficient between anxiety and somatization in our sample bears further scrutiny, specifically to determine if it is a result of our study or a trait of the Serbian population as such.

There is little information about the correlation between stress levels and somatization, causing difficulties in interpretation. Correlation coefficient values are much higher in our sample (r = .55) than in the available literature (.44), and this finding is further validated because both our study and the study in question were performed in the general population [17]. When analyzing the relationship between life satisfaction and somatization the results correspond to those found in the literature with reported correlation indexes of r = -.37 and r = -.36 in
Study 2. Negative correlation between vitality and somatization has been reported [1], but there are some reservations whether different scales measured the same psychological construct. Still, we can say that in this respects, our findings are expected.

Life satisfaction, subjective vitality, depression, anxiety and stress account for 44.7% of somatization variance in the Study 2. Further examination showed that only anxiety, stress and subjective vitality significantly explain somatization variance, regardless of high correlation levels detected with other constructs. This is contrary to what was expected. Depression has been reported to be the strongest predictor of somatization levels [6]. Also, depression and anxiety have been reported to account for 46% of the somatization variance in primary care patient sample [11]. It may be assumed that anxiety and depression have been measured by different tools than in our study, but somatization levels have been evaluated by the PHQ-15 questionnaire. Still, the fact that anxiety is the most prominent single contributor to the regression model may be linked with stronger correlation between anxiety and somatization than expected, making anxiety the leading factor influencing somatization levels in our study.

We have performed an analysis of the somatization levels and symptom prevalence in the complete sample. The original guidelines for interpreting PHQ-15 scores define a score of 1 – 4 as minimal, 5 – 9 as low, 10 – 14 as medium, and 15 – 30 as high. Also female participants have higher levels of somatization than males [7]. This research has been performed in primary care patients, whereas normative data for the general population have been created several times for different cultures. Standard mean values of somatization in the general population were reported to be 4.3 for females and 3.4 for males [1], 5.63 for females and 3.71 for males [10], 7.18 for females and 5.25 for males [17]. All studies found significant gender differences. When interpreting our results, we found that our participants have slightly higher somatization levels than the highest so far reported in general population.

Also, the mean score of 6.3 was found in participants without an anxiety disorder, while means for those with depression and anxiety disorder are 15.2 and 13.9, respectively [11]. A mean score of 13 was found in participants with generalized anxiety, while it was 12 in participants with social anxiety [13]. Mean scores above 11.5 have been found in Korean psychiatric outpatients and therefore we can associate PHQ-15 mean score with a possibility of an anxiety and a depressive disorder. Our sample is above the normative data in the general population, but within low somatization levels given by the original research, and also beneath mean values found in participants suffering from some type of anxiety and depressive disorder. We can conclude that while there is some cause for alarm somatization levels in the population, they are still under pathological levels.

Sleep deprivation, back pain, tiredness, low energy and abdominal pain have the highest mean item scores. On the other hand, tiredness and sleep-related problems have the highest incidence in subjects that are experiencing major difficulties with those disorders. This can perhaps be associated with the fact that anxiety has the highest correlation with the PHQ-15 general score and that anxiety levels account for much of its variance. In the female population, 20.3% of participants have severe difficulties with menstrual cramps and other period related symptoms, making it the fourth most prevalent symptom. Due to the association between anxiety and menstrual symptoms, as well as cultural beliefs with reporting menstrual symptoms [34], further investigation is needed. Comparing the severity of individual symptoms with other research is difficult because of the difference in mean scores, but we can compare the most and least prominent symptoms in the population. In general population, sleeping problems, back pain and low energy were the top three symptoms participants complained about, whereas pain during sexual intercourse, blackouts and chest pain were the three least reported symptoms [9]. This roughly corresponds to our findings.

This research has several limitations. In order to get as large a sample as possible, we have reduced the number of socio-demographic questions, providing the participants an increased sense of anonymity. Although this has yielded a large sample, the lack of more in depth socio-demographic data somewhat limits the study. As in all web-based surveys, the male to female ratio tilted towards the female population, but the number of male participants was still significant to perform valid statistical comparisons. We believe that at this preliminary stage it would be inappropriate to read more into the possible psychological origins of somatization. More sophisticated psychological instruments are needed to make such conclusions on appropriate samples to perform a facet by facet analysis of various personality constructs and their relationships with somatization. This study was conceptualized as a pilot study, only to provide an overview and light the way for future investigation of the concept of somatization and its psychological origins in the Serbian cultural area.

**Conclusion**

Somatization levels in the Serbian general population are slightly higher, in both male and female participants, than the accepted standards, but still under pathological findings. Tiredness, low energy, headaches and back pain are more prominent symptoms with menstrual difficulties gaining a prominent position among symptoms. Neuroticism and anxiety have the highest correlation indices with somatization and should be the focus of further research into this matter. Stress, depression and alexithymia should follow closely. Factors of psychological well-being and distress are better predictors of somatization than personality traits, explaining the larger part of the variance in the regression model. More large scale research with different instruments designed to measure somatization are
needed for further investigation of the particularities of this phenomenon in the Serbian population, but we believe we have created a starting point for further development in this area of research.

References