DETECTION OF SUBCLINICAL STRESS SYMPTOMS WITH THE NEW SSQ-25 QUESTIONNAIRE

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Abstract:

The SSQ-25 stress symptom questionnaire was created to detect even mild, subclinical stress symptoms. In the present study, a total of 412 individuals were assigned (108 employees, 233 undergraduate students, 71 postgraduate students). The Beck Stress Questionnaire (BAI) and the Spielberger Stress Questionnaire (STAI) section on stress as a personality trait were used to highlight anxiety symptoms as stress often triggers stressful events. The SSQ-25 showed high internal consistency (Cronbach's α = 0.944) and reliability (Intraclass Correlation Coefficient test 0.937). The factor analysis showed high

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validity and correlation, 0.740 with Beck Questionnaire and low validity and correlation with Spielberger Questionnaire. The Greek translation has shown good psychometric properties and is a practical and easy-to-use tool for detecting even mild symptoms of stress in the general population.

Keywords: SSQ-25, BAI, STAI, sub-clinical symptoms of stress, questionnaire validation

1. Introduction

When a person feels stressed, his body is tense and his brain is flooded with negative thoughts. Every human being is exposed to stressful situations on a daily basis. In fact, stress can be positive - so-called stressful - when one is called upon to deal with it infrequently (or only sometimes) and has limited, unmanageable weight. In this case, it acts as a catalyst and the person is activated to cope with difficult and stressful situations. The more frequent and intense the stress, the more difficult it is to deal with daily responsibilities.

Stress is a normal physical and mental reaction to a threat, real or so considered by the individual. People usually describe anxiety as agitation, fear, anxiety, upset, anxiety, nervousness, agitation, overexertion. Stress is beneficial when it is a reaction to objectively difficult conditions and when it is commensurate with the difficulties of these conditions. It is not a disorder. On the contrary, intense, persistent and unjustified stress has a negative effect on our daily lives, our professional and social functioning. Symptoms of anxiety such as sweating, palpitations, tremors and feelings of fear and panic often bother patients. Thus, patients' quality of life is usually negatively affected and it is necessary to intervene with behavioral and / or drug therapy [3] [4].

The purpose of the SSQ-25 Stress Scale was to provide clinicians with a practical, easy-to-use and reliable tool for recognizing the symptoms of stress that are not so severe as to be associated with a mental disorder such as generalized anxiety disorder or anxiety. Depression and therefore do not cause a reduction in a person's functioning, but may cause it in the future. The SSQ-25 was developed and validated with very good results by Helms E., Wetzel E., Weierstall R. in 2016 [1]. It measures psychological and physiological symptoms of stress that have occurred within the last four weeks with 25 questions. The answers range from 1 (not at all) to 5 (very intense). Psychological stress is measured by 15 questions about internal tension, nervousness, central issues and concerns (eg "I felt lost or alone in people"). Normal stress is assessed with 10 questions aimed at pain, weight changes, circulatory problems, insomnia (eg "I have a feeling of pulse or difficulty breathing") [1].

The aim of this study was to evaluate the dubbed version of SSQ-25 in a Greek population without mental disorders to measure the symptoms of subclinical stress. A percentage of the populations who had difficult experiences or have experienced natural disasters or some loss is estimated to suffer from subclinical stress symptoms that develop into mental disorders and the most common diagnoses are Anxiety Disorders or

Post Traumatic Stress Disorder. Some patients report symptoms of anxiety, not good concentration, recurring thoughts, dreams, psychological distress or some form of discomfort, report cognitive distortions, guilt, negative beliefs about themselves, others and the rest of the world, fear, anger and shame. Recognition, recording of subclinical symptoms and their evaluation will help prevent disease or appropriate and timely therapeutic intervention.

2. Material and method

The study on validate in the Greek population was carried out by the Special Office for Health Services of the University of Patras. Three groups of people participated: University staff, undergraduate students and postgraduate students. The study was approved by the Bioethics and Ethics Committee and began in April 2018. The scale was translated (Table 1.) by a bilingual member of our team and then a bilingual expert unfamiliar with the original SSQ-25 translated it questionnaire from Greek to German. The new German version did not differ significantly from the original. Then, together with the SSQ-25 questionnaire, the State-Trait Anxiety Inventory Y (STAI Y) scale and the BAI scale were distributed to the participants, after they had agreed in writing to participate.

The Spielberg STAI-Y stress questionnaire was used as a standard for assessing stress as a personality trait. Utilized the part of the questionnaire refers to constant anxiety traits of the personality trait of the individual (personality trait). Completed by the person himself and consists of twenty questions, the possible answers when completing the scale are: (1) almost never, (2) sometimes, (3) often, (4) almost always. A score of 4 indicates the presence of high levels of stress for eleven items (# 22, 24, 25, 28, 29, 31, 32, 35, 37, 38 and 40). The scores of these items are deducted from the total score. The implementation of the STAI - Y scale for stress as a personality trait in a healthy Greek population [5] showed an average value of 27.88 ± 11.43. In contrast, in the patient population, the corresponding mean value was 43.50 ± 9.99 [6] [7].

Beck Anxiety Inventory's Beck Anxiety Inventory is a 21-item self-report questionnaire that assesses how much discomfort the person has experienced in the past week regarding common anxiety symptoms, such as numbness and tingling, sweating that doesn't due to high thermal conductivity, and fear of a possible adverse event. BAI has been used as a standard for assessing stress and focuses on the cognitive and physical characteristics of stress. BAI contains 21 questions, each question being graded from 0 (not at all) to 3 (seriously). Higher overall scores indicate more severe anxiety symptoms. Prices between 0-7: refer to minimal stress, 8-15 indicate mild stress, 16-25 indicate moderate stress, while values between 26-63 are compatible with severe stress. It is also designed to measure clinical stress, which results in minimizing overlap between the scale of depression and anxiety [8].

3.1 Statistical analysis

The x2 test was used to compare qualitative variables and the t-test and ANOVA tests were used to compare quantitative variables. The Pearson r factor was used as a correlation indicator. The psychometric properties of SSQ-25 were assessed as follows: internal structure and coherence with factor analysis, Cronbach α coefficient (acceptable values> 0.9) and correlations between questions and scale and reliability using ICC coefficient. (Intraclass Correlation Coefficient). The scale correlations with the BAI and STAI questionnaires were used as indicators of external reliability. The statistical analysis was performed with SPSS 24.0 for Windows.

Subclinical Stress Symptoms Questionnaire SSQ-25

In stressful times or after certain events people can report the following symptoms. Which of these symptoms have you experienced within the last four weeks and to what extent?

	not at all	slight	moderate	strong	very strong
1. It was hard for me to concentrate.	☐	☐	☐	☐	☐
2. Mistakes happened to me.	☐	☐	☐	☐	☐
3. I was forgetful, unreliable or have lost track of things.	☐	☐	☐	☐	☐
4. I have lost interest or joy in things I have formerly enjoyed.	☐	☐	☐	☐	☐
5. I have not trusted myself anymore to do things that I am actually capable of.	☐	☐	☐	☐	☐
6. I felt lost or lonely among people.	☐	☐	☐	☐	☐
7. I felt empty or burnt-out.	☐	☐	☐	☐	☐
8. I did not see any way out of my situation anymore.	☐	☐	☐	☐	☐
9. I felt the need to be alone.	☐	☐	☐	☐	☐
10. I have avoided or procrastinated important appointments, agreements or decisions.	☐	☐	☐	☐	☐
11. I was not able to pull myself together because I was too exhausted.	☐	☐	☐	☐	☐
12. I felt nervous.	☐	☐	☐	☐	☐
13. I felt hounded or was jittery/nervous.	☐	☐	☐	☐	☐
14. I was not able to wind down or was lost in thought.	☐	☐	☐	☐	☐
15. I was easily irritated, annoyed or moody.	☐	☐	☐	☐	☐
16. I felt dizzy or sick.	☐	☐	☐	☐	☐
17. My eating habits or my weight have/has changed.	☐	☐	☐	☐	☐
18. I had digestive disorders like constipation, flatulence etc.	☐	☐	☐	☐	☐
19. I was oversensitive to environmental stimuli, like light, noise or temperature.	☐	☐	☐	☐	☐
20. I got pains, for example, in the stomach, head or back.	☐	☐	☐	☐	☐
21. I felt numbness or tingling or had a feeling of faintness in certain parts of the body.	☐	☐	☐	☐	☐
22. I had palpitation or breathing difficulties.	☐	☐	☐	☐	☐
23. I had trouble falling asleep, sleeping through or sleeping late.	☐	☐	☐	☐	☐
24. My sexual life was affected.	☐	☐	☐	☐	☐
25. I was more prone to other diseases (e.g. cold, tinnitus, skin irritations etc.). Please specify: _____	☐	☐	☐	☐	☐

Table 1

4. Results

4.1 Features of the sample

The demographic characteristics of the sample are presented in Table 2. We observe that 108 (22.1%) people in our sample consisted of employees, 233 (47.6%) of undergraduate students and 71 (14.5%) of postgraduate students. Also, that 46 (42.6%) of the sample were male employees and 62 (57.4%) were female employees, 75 (32.2%) individuals were male undergraduate students and 158 (67.8%) were female and 28 (39.4%) were male graduate students and 43 (6.6%) were women. Also, we observe that 108 people in the sample were employees with an average age of 40.66 233 were undergraduates with an average age of 21.65 and 71 were postgraduate students with an average age of 26.41.

Table 2: Demographics of the Sample

	Number (%)	Age	Gender (%)	
			Men	Women
Employee	108 (22,1%)	40,66 (9,95)	46 (27,2%)	62 (19,4%)
Undergraduate Student	233 (47,6%)	21,65 (2,46)	75 (44,4%)	158 (49,4%)
Postgraduate Student	71 (14,5%)	26,41 (5,01)	28 (16,6%)	43 (13,4%)

p < 0,000 Anova
p > 0,075 x²

Table 3: Average and Standard Deviation of Questionnaires * Age

		N	SD	T.A.
STAI	0 - 25	264	46,56	6,69
	26 - 35	75	48,80	5,578
	36 - 45	34	46,71	4,835
	46 - 55	33	37,27	20,22
	56 - 65	6	45,27	8,59
	Σύνολο	412	44,92	9,18
BAI	0 - 25	264	38,48	9,59
	26 - 35	75	32,58	8,79
	36 - 45	34	34,69	11,85
	46 - 55	33	38,47	12,510
	56 - 65	6	29,78	11,133
	Σύνολο	412	36,88	10,251
SSQ-25	0 - 25	264	58,76	18,9
	26 - 35	75	51,56	18,38
	36 - 45	34	56,44	21,82
	46 - 55	33	64,03	23,75
	56 - 65	6	33,17	10,98
	Σύνολο	412	52,79	18,76

p < 0,000 t- test Anova
p > 0,061 t- test Anova

The SSQ-25 and BAI questionnaires show a statistically significant difference in sample age (p <0.000). While the STAI questionnaire does not show a statistically significant difference in sample age (p> 0.061). (Table 3.)

The SSQ-25 questionnaire showed a statistically significant difference in sample size (p <0.000), the STAI questionnaire did not show a statistically significant difference in sample size (p> 0.370) and the BAI questionnaire showed a statistically significant difference in terms of concerns the property of the sample (p <0.000). To find correlations between the SSQ questionnaire with BAI and the stress category, we applied Bivariate Correlation based on the Pearson correlation index. In Table 6 we observe that the SSQ has a statistically significant correlation with the BAI questionnaire (0.740) but also with the BAI stress category (0.583). We note that the SSQ-25 questionnaire is related to the BAI questionnaire while it is not related to the STAI questionnaire. (Table 4)

Table 4: Correlation SSQ με την BAI και STAI

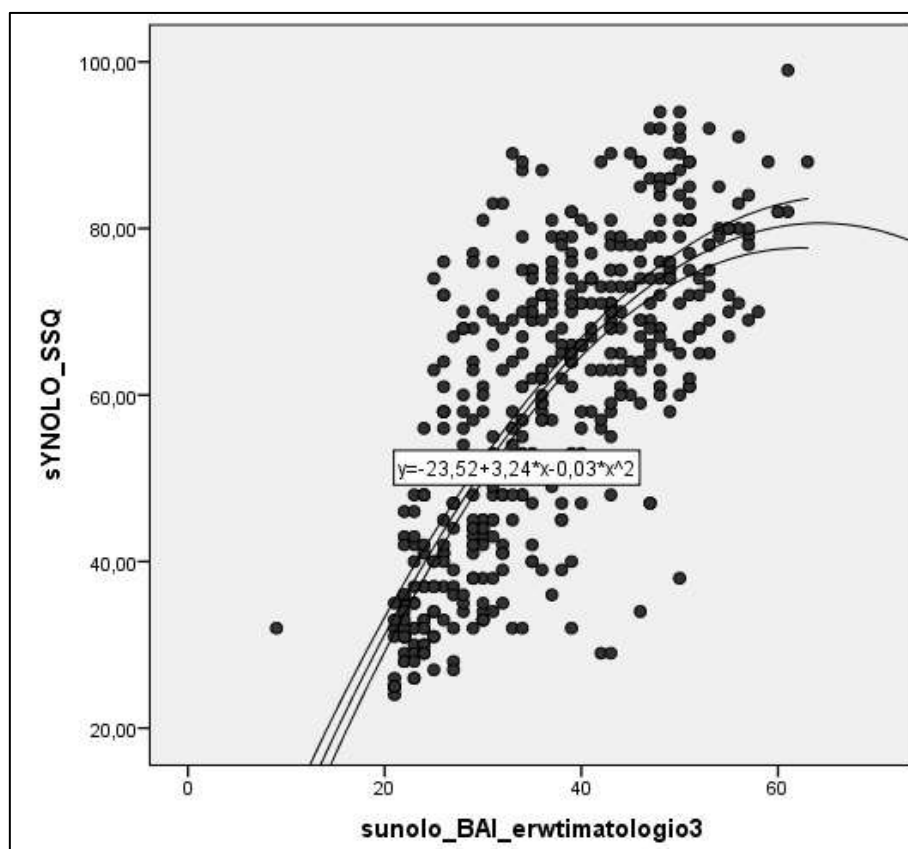|		BAI	STAI
SSSQ	**Pearson Correlation**	0,736	0,01
	Sig. (2-tailed)	0,000	0,847
	N	412	412

p < 0,000 Correlation
p > 0,740 Correlation

Figure 1: Scatter plot SSQ-BAI

We also see in the following diagrams (Figure 1) a small funnel in the higher series SSQ and BAI which means that BAI explains a significantly larger variation in the lower and middle range of the SSQ than in the upper level. Therefore, the SSQ scale shows its peak for lower intensity symptomatology compared to YES.

In Figure 2 we can see that STAI explains the SSQ only in the middle range. So, we can see the SSQ equation according to BAI and STAI respectively.
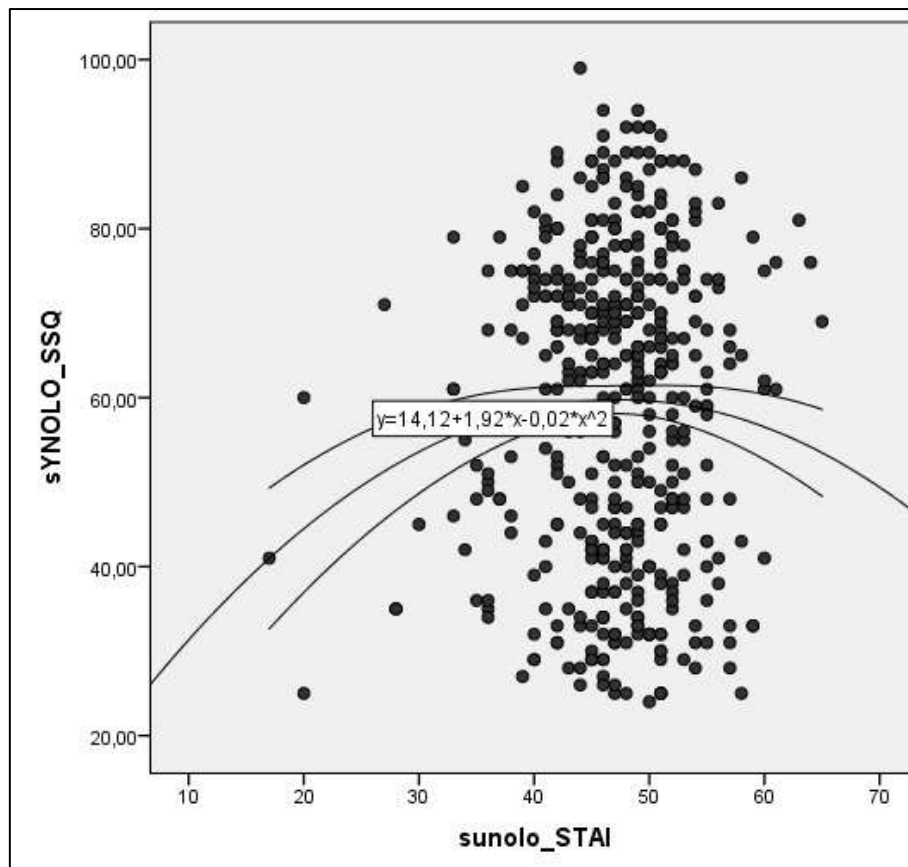

Figure 2: Scatter plot SSQ-STAI

4.2 Psychometric properties of SSQ-25

A. Internal coherence

The Subclinical Stress Symptoms Questionnaire shows high internal consistency (Cronbach's α = 0.944) and reliability (test-retest Intraclass Correlation Coefficient 0.937). The same result is observed in the Beck Anxiety Inventory BAI questionnaire, high internal consistency (Cronbach's α = 0 0.920) and reliability (test-retest Intraclass Correlation Coefficient 0.907). In contrast, the State¬ Trait Anxiety Inventory STAI¬ questionnaire has low internal consistency (Cronbach's α = 0.443) and reliability (test-retest Intraclass Correlation Coefficient 0.434).

B. Internal reliability

The Intraclass Correlation Coefficient was 0.937.

C. Factor analysis

There is a high validity and correlation, 0.736 with the Beck Questionnaire and a low validity and correlation with the Spielberger Questionnaire. The SSQ questionnaire is divided into two factors: psychological stress (1 -15) and normal stress (16 - 25).

D. External reliability

The STAI and BAI questionnaires were used as standard for gold stress as a permanent feature and clinical stress, respectively. SSQ-25 correlation ratios were STAI-positive and 0.740-strong with BAI.

In order to find possible correlations between the SSQ questionnaire and the BAI, we applied Bivariate Correlation based on the Pearson correlation index. We compare SSQ25 and BAI in terms of questions. If in SSQ25 1-15 psychological stress, 16-25 physiological stress could also BAI questions 4,5,9,10,14,16,17 psychological stress and questions 1,2,3,6,7,8,11, 12,13,15,18,19,20,21 physiological stress. From the following table we observe that the questions of the SSQ belonging to the Psychological Stress context have a statistically significant correlation with the corresponding context of the BAI questionnaire (0.701) but also with the framework of the Physiological Stress of BAI (0.586). Also, the questions of the SSQ that belong to the Physiological stress have a statistically significant correlation with the corresponding of the BAI questionnaire (0.701) but also with the BAI Psychological Stress (0.562) Table 5.

Table 5

Correlations					
		SUM_1_15_SSQ_ PSYXOLOGICAL_ STRESS	physiological Stress _SSQ	psychological Stress-BAI	physiological Stress-BAI
psychological Stress- SSQ	Pearson Correlation	1	,687**	**,701****	**,586****
	Sig. (2-tailed)		,000	,000	,000
	N				
physiological Stress _SSQ	Pearson Correlation	,687**	1	**,562****	**,701****
	Sig. (2-tailed)	,000		,000	,000
	N				

5. Conclusion

The aim of this study was to assess the reliability and validity of the SSQ-25 questionnaire in detecting symptoms of subclinical stress. The Greek version of the SSQ-25 has good psychometric properties and may prove to be a useful tool for clinicians in identifying subclinical stress symptoms in the general population. To validate the SSQ-25 scale, we used the Beck Stress Questionnaire and the Spielberger Stress Questionnaire for anxiety as a personality trait. Investigative and confirmatory factor analyzes revealed and

confirmed the two-factor model (psychological and physiological symptoms of stress) with Bivariate Correlation based on the Pearson correlation index. Cronbach's alpha was 0.94.

The subclinical nature of SSQ-25 has been confirmed with the help of scatter plots, where the SSQ scale shows its peak for lower intensity symptomatology compared to the Beck stress scale, which is also the case in the German version. [1] The study of subjective stress symptoms in non-clinical populations is of high scientific and clinical-practical importance. This questionnaire can be used in psychiatric research, focusing specifically on the symptoms of stress-related mental disorders that occur before the onset of the clinical disorder. In addition, subclinical symptoms when associated with a person's dysfunctional beliefs about themselves, others, and the future are likely to lead to chronic stress or anxiety. Even a person's dysfunctional beliefs and destructive misinterpretation of the disease can develop dysfunctional coping mechanisms that can arise in the context of psychopathological development. [9] So the important thing is to create prevention and appropriate treatment approach before it manifests itself or at the beginning of the disease.

SSQ-25 is suitable for developing prevention approaches in the early stages of stress-related mental disorders and can also be used to guide the symptoms of stress in clinical practice.

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