The Self-Management Self-Test (SMST)
The Science

What is the SMST?

The Self-Management Self-Test (SMST) is a five-item self-assessment scale designed to measure self-management competence in individuals with or without a psychiatric disorder. The SMST assesses five dimensions of self-management. Taken together, these five dimensions reflect the psychological construct "self-management competence":

1. Awareness of reality (be aware of internal state of mind and perceive external reality)
2. Interpersonal relationships (sustain relationships and maintain social contacts)
3. Orientation towards the future (set priorities and plan my own future)
4. Decision making (choose among several options and make decisions)
5. Taking action (do what realistically can be done and act effectively)

What is self-management?

The concept of self-management is closely linked to concepts of self-efficacy and self-regulation but can be distinguished from these. Self-management is a way of dealing with oneself and relates to actions undertaken to create order, discipline, and control. In this sense, self-management is a combination of several behavioral and cognitive strategies that ultimately lead to behavioral change. When developed properly, self-management enables the mastery of challenges and difficulties in everyday life (especially in individuals at risk for burnout at work) and in people with chronic psychiatric or non-psychiatric illness.

What does the SMST do?

Primary Endpoint

The SMST can be used to measure "self-management competence" as a five-dimensional psychological construct. This is the primary endpoint because the SMST was specifically designed to measure this construct.

Secondary Endpoints

The SMST can be used to measure several secondary endpoints that are related to the concept of "self-management competence". These endpoints are secondary because the SMST was not specifically designed to measure these endpoints. However, the SMST validation study showed statistically significant correlation between the SMST and the following questionnaires or rating scales which were designed to measure these endpoints:

- Burnout (as determined using Maslach Burnout Inventory; MBI)
- Chronic stress (as determined using Screening Scale for Chronic Stress; SSCS)
- Acute stress (as determined using Visual Analog Scale; VAS)

- Fatigue (as determined using Multidimensional Fatigue Inventory; MFI-20)
- Psychosocial burden (as determined using Patient Health Questionnaire; PHQ)
- Depressivity (as determined using Patient Health Questionnaire; PHQ)
- Somatoform disorder (as determined using Patient Health Questionnaire; PHQ)
- Major depression (as determined using Patient Health Questionnaire; PHQ)
- Panic syndrome (as determined using Patient Health Questionnaire; PHQ)

How was the SMST validated?

The validation study was carried out in order to validate the SMST in terms of convergent validity, the ability to differentiate, criterion validity, internal consistency, and test-retest reliability.

Methods

87 adults hospitalized for treatment of major depression (clinical sample) and 595 individuals from the general population (population sample) filled out the SMST and 5 other stress-related psychometric instruments measuring similar constructs. All instruments were repeated 4 to 6 weeks later. Convergent validity, internal consistency, and test-retest reliability were tested based on data from the population sample. Convergent validity was determined by correlations with the other stress-related psychometric instruments (MBI, SSCS, VAS, MFI-20, PHQ). To test for criterion validity, the clinical sample was matched with a subsample from the population sample, consisting only of individuals without a psychiatric disorder as screened using PHQ (nonclinical subsample, n=87). The ability to differentiate between the clinical sample and the nonclinical subsample was based on receiver operating characteristic (ROC) curve analysis.

Results

The population sample showed a mean SMST total score of 12.41 points. Thus, the population sample reported being in between “doing moderately well” and “doing fairly well” and in between having to “do more” for their self-management and “practicing good self-management”.

Correlations between the SMST and the other stress-related tests (MBI, SSCS, VAS, MFI-20, psychosocial burden [dimensional], depressivity [dimensional], somatoform disorder [dimensional], major depression [categorical], panic syndrome [categorical] as determined using PHQ) in the population sample were moderate to strong.

The difference in SMST total score between the matched clinical sample (mean = 9.36 points out of 20 = “doing moderately well”) and the control sample (mean = 12.94 points out of 20 = ”doing fairly well”) was large (Effect Size d=1.3).

The ability to differentiate between the clinical sample and the nonclinical subsample was excellent, suggesting that the SMST can differentiate well between patients with depression and people without depression. The cut-off score was 10.5 points out of 20 possible points. This means that persons with a lower score would be determined to have depression, while persons with a higher score would be determined to have no depression nor any of the disorders as determined using the Patient Health Questionnaire (PHQ).

Sensitivity was such that 71% of persons with depression would be detected as having depression using the SMST. Specificity was such that 82% of persons without a psychiatric disorder (as determined using the PHQ) would be detected as having no psychiatric disorder using the SMST. These results suggest that sensitivity and specificity of the SMST regarding depression is comparable to the sensitivity and specificity of screening instruments for other psychiatric disorders such as the Trauma Screening Questionnaire (TSQ). Although sensitivity and specificity of the SMST was lower than those of several established questionnaires (e.g., HADS; WHO), they are considerably higher than the sensitivity and specificity of clinicians in recognizing depression. These findings suggest that the SMST may be a useful instrument to prescreen individuals from the general population for depression.

The SMST showed a significant difference between the clinical sample and the nonclinical subsample with a large effect size. The area under the ROC curve (AUC) was excellent, suggesting that the SMST can distinguish between the clinical and nonclinical samples.

Internal consistency was excellent, which means that the five items measure “self-management competence” as a multi-dimensional concept very effectively. Selectivity of the five items is moderate to excellent, which means that each item is an important part of the test as a whole: each item captures something similar to what the total test does. Furthermore, high selectivity of the SMST suggests that each item contributes to the test in terms of distinguishing between individuals with various characteristics. Each of the five items is important for the reliability of the test as a whole. As the SMST is likely to differentiate particularly well at low levels of self-management competence, it may be particularly useful in assessing individuals with depression or other psychiatric disorders.

Test-retest reliability of the SMST was fairly low. This means that the SMST is sensitive to change over time and can be used to measure change in self-management competence as a result of any treatment (drug or non-drug intervention).

In what ways can the SMST be used?

Measure self-management competence in individuals from the general population with or without risk for stress-related problems

Measure self-management competence in individuals from the general population at risk for burnout or depression

Measure self-management competence as Patient Reported Outcome (PRO) in patients with a psychiatric or non-psychiatric illness,

Pre-screen individuals for stress, anxiety, fatigue, burnout, depression.

Measure the level of psychosocial functioning in individuals with or without a psychiatric or non-psychiatric illness.

Measure improvement in terms of self-management competence over time as a patient receives treatment (drug or non-drug intervention)

The SMST can support the diagnostic process by contributing to the diagnostic assessment of individuals who may or may not have a psychiatric disorder.

The presence or absence of a psychiatric disorder cannot be determined using the SMST alone.

What is the value of the SMST?

To measure “self-management competence” as a concept.

Can be used in individuals with or without a psychiatric illness.

Can be used in individuals with or without a non-psychiatric illness.

Can be used as prescreening for depression.

Statistically robust cut-off for depression at 10.5 points (out of 20 possible points)

Use of SMST as Patient Reported Outcome (PRO) discussed with the FDA in a Critical Path Innovation Meeting (CPIM) in December 2019

FDA oncologist recognized the potential of the SMST as PRO in oncology trials.

Reference

Wehmeier PM, Fox T, Doerr JM, Schnierer N, Bender M, Nater UM. Development and validation of a brief measure of self-management competence. The Self-Management Self-Test (SMST). Therapeutic Innovation & Regulatory Science 2019 DOI: 10.1177/2168479019849879