Original Paper

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# Validity and Reliability of "AM SAD", a Short Geriatric Depression Screening Tool, in Turkish Elderly People

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**ABSTRACT:**

Validity and reliability of "AM SAD", a short geriatric depression screening tool, in Turkish elderly people

**Objective:** Depression is a serious public health problem among the elderly and screening for depression in the elderly for primary care physicians is essential. The objective of this study was to evaluate the validity and reliability of the AM SAD (Appetite, Mood, Sleep, Activity, and thoughts of Death) and to compare the results with DSM-5 depression criteria in Turkish elderly people.

**Methods:** This study was conducted in a geriatric division of a tertiary hospital in the west part of Turkey, Izmir. A total of 186 elderly outpatients were included in the study. Translation from the original English version was performed according to the standardized methods. Yesavage Geriatric Depression-15 Scale (YGDS), and the "AM SAD" were administered following by the Mini-Mental Status Examination (MMSE). Patients were assessed for depression using DSM-5 criteria and the results were compared with AM SAD.

**Results:** A statistically significant correlation was established between YDGS-15 and AM SAD scores (r:0.64, p<0.001). AM SAD had also a mild-moderate statistically significant correlation with DSM-5 criteria that were depressive or not (r: 0.58 andr: 0.41, respectively). With a cut-off score of ≥ 2 points, the AM SAD showed sensitivity of 94% and specificity of 78% in the detection of depression in geriatric patients. The area under the receiver-operating characteristics curve (95% confidence interval) for the AM SAD was 0.92 (95% CI=0.873-0.968), p<0.001, kappa: 0.632. When cut-off point was selected as 3 points, sensitivity and specificity was found 70% and 95%, respectively (p<0.001, kappa: 0.692).

**Conclusion:** AM SAD which has a moderate correlation with DSM-5 criteria could be useful for screening depression in Turkish elderly patients in the primary care clinics. Although a cutoff score was 2, the cut-off score should be 3 if the appetite score is 2, because appetite affairs are quite common in elderly.

**Keywords:** SLU AM SAD, depression, elderly, DSM-5

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## INTRODUCTION

Depression is a serious public health problem among the elderly and is among the leading causes of disability-adjusted life years in the world[1,2]. Therefore, it is essential to detect and treat depression in older adults. It has been shown that primary care physicians detected only 40% to 50% of depression among the elderly, emphasizing the vast numbers undetected and untreated[3]. Screening scales for depression in the geriatric population may be long and time pressures may interfere with the assessment of the patient in busy clinical settings. A new depression screening scale was developed specifically for the elderly by Chakkamparambil et al. and called the St. Louis University (SLU) "AM

SAD". AM SAD was found to be a simple, brief and reliable depression screening tool in geriatric outpatients. Being a short scale, the tool was developed to enable the physician to gain time while assessing elderly patients in daily routines, and also reported to be used for retrospective study designs. Its validity, reliability, and responsiveness have been proven. It has five questions which ask for change in Appetite (A), Mood (M), Sleep (S), Activity or energy level (A), and for thoughts of Death (D) (life not worth living, worthlessness/guilt) during the last 2 weeks. Frequency of occurrence of each symptom is quantified as: (0)-never, (1)-one day only and (2)-two or more days. The answers range from 0 to10 and the total score is the sum of five questions (4).

This study was aimed to evaluate the validity and reliability of the 'AM SAD' and to compare the results with DSM-5 depression criteria for elderly patients.

## METHODS

Participants were 380 consecutive outpatients who were evaluated for various reasons between May and November 2014 in the Department of Geriatric Medicine in our university hospital. Participants with any neurodegenerative and other cerebral disorders (Parkinson's disease, dementia, delirium, etc.), with psychotic episodes, or with a history of substance or alcohol use or any drugs that can affect mood such as benzodiazepines, alpha methyl dopa, corticosteroids or who were unable to speak Turkish were excluded from the study. Cognitive impairment was assessed with the Mini-Mental State Examination (MMSE). Patients who scored less than 24 on the MMSE were excluded from the study. Also, the Yesavage Geriatric Depression Scale-15 (YGDS) was administered to all the participants.

One hundred eighty-six out of 380 patients aged 65 years and older were included into the study.

### Translation

The process of Turkish translation of the AM SAD included the following steps: 1) the first stage was to obtain a translation permission, which was obtained from the authors of the original scale[4]; 2) two independent forward translations into Turkish were done by two native linguistic specialists. Both translators were blind to the other's translation; 3) a consensus forward version was developed by two specialists who are highly skilled in English; 4) this consensus forward version was back-translated into English by a bilingual person; the backward version and the original text were compared by an independent supervisor. None of the items of the Turkish text needed any modifications following this stage.

### Statistics

Statistical analyses were performed using the Statistical Package for the Social Sciences (SPSS) 17.0 and using Power Analysis and Sample Size (PASS) 2008 Statistical Software (NCSS, Kaysville, UT). A sample size of 165 patients was calculated to ensure that the minimum required size was within a 95% confidence interval and 5% of the true proportion. Demographic characteristics of participants were analyzed using descriptive statistics. Cronbach's $\alpha$ coefficient was calculated to evaluate the internal consistency of the "AM SAD". The Kappa consistency test was used to evaluate the consistency between Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5) criteria and the AM SAD. Cutoff scores were also assessed by the receiver operating characteristics (ROC) curve. Sensitivity, specificity, and positive and negative predictive values (PPV and NPV), for which DSM-5 was used as a gold standart, were calculated for different cutoff scores. depression diagnosis as a gold standart. In all analyses, $p<0.05$ was taken to indicate statistically significance.

The protocol for this study was approved by the Local Ethics Committee. All of the participants signed informed consent forms.

## RESULTS

In the present study, a total of 186 participants were assessed. The mean age of the patients was

**Table 1: Sociodemographics of the participants (n= 186)**

| Characterictics | Values |
|---|---|
| **Age- Mean, (SD)** | 74.1 (6.3) |
| **Gender** | n (%) |
| Female | 113 (60.8) |
| Male | 73 (39.2) |
| **Level of education** | n (%) |
| Illiterate | 15 (8.1) |
| Less than 5 years | 12 (6.4) |
| 5-8 years | 81 (43.6) |
| Equal or more than 9 years | 78 (41.9) |
| **Comorbidities** | (%) |
| Hypertension | 69.9 |
| Hyperlipidemia | 21.5 |
| Diabetes Mellitus | 36.6 |
| Coronary Artery Disease | 22.6 |
| Congestive heart failure | 9.1 |
| Cerebrovascular Disease | 4.3 |
| Hypothyroidism | 16.1 |
| Chronic Obstructive Pulmonary Disease | 7.0 |
| **Medications** | n (%) |
| Anti-depressants | 83 (44.7) |
| No anti-depressants | 103 (55.3) |

**Table 2: Comparisons of the AM SAD and YGDS-15 with DSM-5**

| Depression | AM SAD | YGDS-15 | DSM-5 |
|---|---|---|---|
| No, % (n) | 57.6 (107) | 80.8 (156) | 71.5 (133) |
| Depression, % (n) | 42.4 (79) | 19.2 (30) | 28.5 (53) |

AM SAD: the Turkish version of AM SAD tool; YGDS: Yesavage Geriatric Depression Scale; n: number of patients

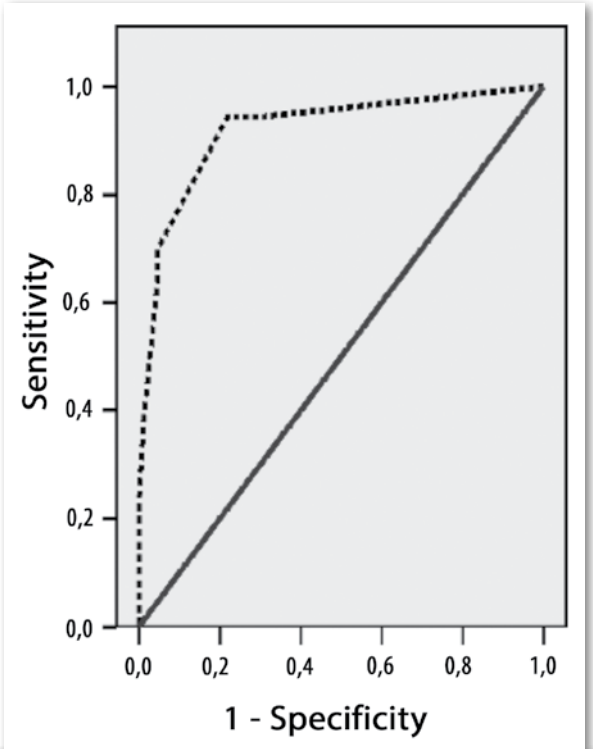


**Figure 1: Receiver operating characteristic curve (ROC) analysis of the AM SAD total scores to detect depression (AUC=0.920, p<0.001)**

74.1 (6.3) with 60% being female. Characteristics of participants including the distributions of chronic physical diseases were shown in Table 1.

The mean score (SD) on the AM SAD was 1.72 (2.42); YGDS-15 was 2.97 (3.4); MMSE was 27.3 (1.9). Cronbach's α coefficient was calculated as 0.69. The AM SAD correlation (Pearson) with YGDS was r=0.64 (p<0.001) and when patients were assessed for depression using DSM-5 criteria, and the AM SAD correlation with depression (n=53) was r=0.58 (p<0.001) w/o depression (n=133) was r=0.41 (p<0.001) (Table 2). In addition, the prevalence of major depressive disorder was found 28.5% according to DSM-5.

Question 4 and 5 of the "AM SAD" were found to be most important contributor to the tool (Table 3).

ROC analysis for the AM SAD revealed an optimal balance of sensitivity and specificity in differentiating patients with depression from those without depression at a cut-off of 2 points with AUC of 0.92 (95% CI=0.873–0.968, p<0.001, kappa:

**Table 3: Correlations of each question in the AM SAD with the AM SAD, DSM-5 criteria and YGDS-15**

| | AM SAD | | DSM-5 | | YGDS-15 | |
|---|---|---|---|---|---|---|
| | r | p | r | p | r | p |
| **Question 1** | 0.43 | <0.001 | 0.51 | <0.001 | 0.36 | <0.001 |
| **Question 2** | 0.51 | <0.001 | 0.44 | <0.001 | 0.39 | <0.001 |
| **Question 3** | 0.47 | <0.001 | 0.29 | <0.001 | 0.27 | <0.001 |
| **Question 4** | 0.78 | <0.001 | 0.55 | <0.001 | 0.56 | <0.001 |
| **Question 5** | 0.59 | <0.001 | 0.61 | <0.001 | 0.51 | <0.001 |
| **Total** | | | 0.58* | <0.001* | 0.64** | <0.001** |

AM SAD: the Turkish version of AM SAD tool; YGDS: Yesavage Geriatric Depression Scale, * AM SAD correlation (Pearson) with DSM 5 ** AM SAD correlation (Pearson) with YGDS

**Table 4: Discriminant validity of the AM SAD for depression**

| Cut-off value | Sensitivity (%) | Specificity (%) | PPV (%) | NPV (%) | Kappa |
|---|---|---|---|---|---|
| 2 | 94 | 78 | 63.3 | 97.2 | 0.632* |
| 3 | 70 | 95 | 86 | 88.8 | 0.692* |
| 4 | 64 | 95 | 85 | 87.0 | 0.644* |
| 5 | 36 | 99 | 95 | 79.5 | 0.432* |

PPV: Positive predictive value; NPV: Negative predictive value; *p<0.001,

0.632), and with a sensitivity of 94%, a specificity of 78%. When cutoff point was selected as 3 points, sensitivity and specificity was found 70% and 95%, respectively (p<0.001, kappa: 0.692) (Figure 1).

Sensitivity, specificity, and positive and negative predictive values of the AM SAD are presented in Table 4. The kappa values of AM SAD cut-off scores were of 2, 3, 4 and 5 were 0.632, 0.692, 0.644 and 0.432, respectively.

A linear regression analysis was performed by taking the "AM SAD" score as an independent variable to calculate a YGDS-15 score as shown below:

**YGDS-15 score = 0.96+ 1.16 (AM SAD score)**

## DISCUSSION

In the present study it was demonstrated that the "AM SAD" is a valid and reliable depression screening tool in Turkish geriatric out-patients who do not have cognitive impairment and has a moderate correlation with DSM-5 criteria in those patients having depression.

The prevalence of depression was found to be 45.8% among individuals aged 65 years and older in a population-based survey in Turkey[5]. The present study also demonstrated that the prevalence of major depressive disorder was 28.5% in geriatric out-patients. Those findings emphasize that depression is a major health problem among elderly in our country, and identifying the a brief, reliable and effective screening tool is necessary particularly in the primary care setting. Although depression is a common problem in the elderly, it is often undetected, undiagnosed, untreated, or undertreated[6]. It has also been reported that most elderly suicide attempters had been diagnosed with a mood disorder after the attempt and only 4% of these adults had been diagnosed before the attempt[7]. Therefore, a screening tool is required to detect depression efficiently. We believe that the AM SAD, a time-effective screening tool for depression, will cover the need of primary care physicians and increasing numbers of elderly depressives will be detected in our country.

In the present study, it was found that the AM SAD had a moderate correlation with the YGDS-15 and a cutoff score of ≥2 had a sensitivity of 94% and a specificity of 78% with respect to differentiating patients with depression. Although a cutoff score of 2 was reported, when it is thought that there is a physiologic reduction in appetite and food intake with age, known as the anorexia of aging[8,9], we think that it may be more accurate to use a score of 3 as a cutoff (Kappa:0.692) to differentiate those with and without depression, even if sensitivity decreases from 94% to 70%. Moreover, the specificity increases from 78% to 95%. It was also consistent with the findings of the study of Chakkamparambil et al. who revealed a cutoff score of 3-4[4]. Different from the results of that study, activity or energy level (A) and thoughts of Death were shown to be very integral instead of sleep and appetite for Turkish elderly patients. Loss of appetite and sleep in our elderly patients could be attributed to their comorbidities and drugs or to their normal aging in our culture. The high education level in the original study may be another reason for the differences.

One of the strengths of this study was with respect to the diagnosis of depression which was assessed by DSM-5 criteria. We have shown that the tool is also applicable for patients who are diagnosed with depression by using DSM-5 criteria. The main limitation was that our results

were obtained from patients who were admitted to a tertiary center, so they did not represent the whole community. Another limitation of this study was the enrollment of only cognitively normal elderly patients as in Chakkamparambil's study. It would be very interesting to show that this tool could also work on demented elderly patients. The final limitation may be that use of chronic medications were not recorded.

In conclusion, AM SAD is a valid, reliable, and practical geriatric depression screening tool which has a moderate correlation with DSM-5 criteria and the YGDS-15. The advantages of the present scale versus other geriatric depression scales are as follows: it is simple, brief, a time-effective, and sensitive; its items can be easily understood by elderly. It would make the screening more efficient and affordable in primary care clinics for Turkish elderly people.

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# 'SLU AM SAD' DEPRESYON ÖLÇEĞİ

**Kategoriler / İlgili Alanlar**

İştah
Duygu-durum
Uyku
Aktivite ve Enerji
Ölüm (tükenme), değersizlik/suçluluk duygu ya da düşünceleri

Tarih _____ Cinsiyet _____ Yaş _____

Geçen 2 hafta içinde, kaç kez yaşadınız?

1. İştahınızda nedenini bilmediğiniz bir değişiklik oldu mu?

| | |
|---|---|
| Hiç | 0 puan |
| 1 gün | 1 puan |
| 1 günden fazla | 2 puan |

2. Moralinizde nedenini bilmediğiniz bir kötüleşme oldu mu?

| | |
|---|---|
| Hiç | 0 puan |
| 1 gün | 1 puan |
| 1 günden fazla | 2 puan |

3. Uyku düzeninizde nedenini bilmediğiniz bir değişiklik (artma/azalma) oldu mu?

| | |
|---|---|
| Hiç | 0 puan |
| 1 gün | 1 puan |
| 1 günden fazla | 2 puan |

4. Her zamanki günlük işlerinizi yapmak istemediğiniz ya da yapmak isteseniz de kendinizi güçsüz hissettiğiniz oldu mu?

| | |
|---|---|
| Hiç | 0 puan |
| 1 gün | 1 puan |
| 1 günden fazla | 2 puan |

5. Kendinizi değersiz ya da suçlu hissettiğiniz veya hayatınızın değersiz olduğunu düşündüğünüz oldu mu?

| | |
|---|---|
| Hiç | 0 puan |
| 1 gün | 1 puan |
| 1 günden fazla | 2 puan |

Toplam skor: