

Reliability and Validity of Turkish Version of DSM-5 Substance Use Scale



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ABSTRACT

Objective: This study aims to evaluate the severity of substance use disorders according to the DSM-5 criteria and to show the reliability and validity of the Turkish version of the DSM-5 Substance Use Scale that improved to learn what kind of substances are used.

Methods: In this study, 54 in or out-patients who met the criteria for any substance use disorder according to DSM-5 and who are receiving treatment in Psychiatry Department of Celal Bayar University Faculty of Medicine and AMATEM department of Bakırköy Prof. Dr. Mahzar Osman Mental Health and Neurology Training and Research Hospital, were included. One hundred volunteers without any mental or physical disease were also recruited as the control group. Beside the DSM-5 Level 2 substance use scale, Addiction Profile Index was used for concurrent validity. Internal consistency coefficient and item-total correlation analysis were performed for reliability analysis. ROC Analysis was used in the validity analysis.

Results: Mean age was 26.97±10.20 years in the study group and 39% of the sample (n=60) were female. 5.6% (n=3) of the patient group were female and 94.4% (n=51) were male. In the control group, 57% (n=57) were female and 43% (n=43) were male. Of the patients diagnosed with substance use disorder (n=54), 88.7% had opiate use disorder, 5.6% had polysubstance use disorder, 5.6% had other (unknown) substance (synthetic cannabinoid) use disorder and 1.8% of patients have cannabis use disorder.

The internal consistency of the substance use scale was 0.80 and item-total correlation coefficients were between 0,196- 0,643 (p<0.0001).

Coefficient of correlation analysis with API was calculated as r=0.806 (p<0.0001).

Conclusion: The results showed that DSM-5 Substance Use Scale is a valid and reliable questionnaire that can be used to measure the progress of different dimensions of alcohol and substance use.

Keywords: DSM-5, Substance Abuse, Substance-Related Disorders, Reliability and Validity

INTRODUCTION

The rapid spread of substance use all over the world, the increase in the rates of multiple substance use and the emergence of new types of substances increase the frequency of encounters with substance use disorders and the diversity of cases encountered in the daily psychiatry practice. Substance use disorders cause social problems in addition to major health problems. Early diagnosis of the substance use disorder and effective intervention significantly reduces the problems

thereof (Fleming et al. 1997). However, not more than half of the patients can be diagnosed and only some are referred to treatment (Dawson et al. 1992, Cherpitel et al. 1996). Approaches to patients with substance use disorder include diagnostic scales as well as diagnostic interviews as in the case of other mental disorders.

Accurate detection of substance use is critical in the treatment of substance use disorder, especially in the initial period of treatment when the patient's motivation for treatment is

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high. In addition to psychiatric examination, toxicology tests and diagnostic scales are used in the detection and follow-up of substance use-related disorders. Toxicology tests have an important place in the detection of illegal substance use, however only certain frequently used substances are evaluated within the scope of the toxicology tests. Detection windows may be short and vary depending on the type of substance (Sullivan et al. 2020). For example, toxicology tests typically cannot detect cocaine or methamphetamine use beyond a 3-day lag period (Hadland and Levy 2016). Moreover, these tests can be conducted provided that the patient gives consent for the sampling procedure. Even then, rigorous hygienic procedures must be followed and the procedure is costly. Given these limitations, short and easy-to-apply self-report scales can contribute to the accurate detection of substance use as complementary tools.

There are several assessment scales and tests used to evaluate substance use disorders in psychiatry clinics, population-based screenings and primary healthcare services. An example to the scales currently in use for screening, diagnostic evaluation, and severity assessment is CAGE (Cut, Annoyed, Guilty, and Eye), which is frequently used in population-based screenings, but is not a definitive diagnostic tool. A score of 2 points or more from CAGE suggests a high alcohol dependence (Ewing, 1984). Another example is the Alcohol Use Disorders Identification Test (AUDIT), which is used to detect alcohol use disorder. AUDIT has two versions, one is a self-report scale and the other is completed by a clinician (Conigrave et al. 1995). The Michigan Alcoholism Screening Test (MAST) is a 25-item self-report scale that screens for alcohol use problems (Gibbs, 1983). The Drug Abuse Screening Test (DAST-10) is a test modeled after MAST to measure the level of an individual's substance use-related problems in the past year (Skinner, 1982). The Drug Use Disorders Identification Test (DUDIT), developed in parallel with AUDIT, aims to detect the problem of substance use (Berman et al. 2005). The Penn Alcohol Craving Scale (PACS) is a scale developed to assess the severity of alcohol craving in the past week (Flannery et al. 1999).

The majority of tests used to detect substance abuse were developed in the United States, and there is little evidence of their specificity and sensitivity in other cultures (WHO ASSIST Working Group, 2002). The NIDA (National Institute on Drug Abuse)-Modified ASSIST (Alcohol, Smoking and Substance Involvement Screening Test), which was adapted from the DSM-5 (Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition) Substance Use Scale, was developed by the World Health Organization (WHO) in 2002 by a group of researchers working in the field of substance abuse in representative member countries from different parts of the world, in order to meet the need for a reliable, valid, flexible, comprehensive and inexpensive international screening test for drug use, given the prevalence

and consequences of drug use worldwide. The validity and reliability analyses for the Turkish version of NIDA-Modified ASSIST were conducted by Altın and Coşkunol in 2019 (Altın ve Coşkunol, 2019).

Following numerous innovations in the field of substance use-related disorders in DSM-5, the American Psychiatric Association published the DSM-5 Level-2 Substance Use Scale, an adapted version of the NIDA-Modified ASSIST, and made it available to clinicians and researchers. The advantage of this scale over many other scales used in the field of addiction is that it queries the substances listed in the "Substance-Related and Addictive Disorders" section of the DSM-5, especially the SCID-5 (The Structured Clinical Interview for DSM-5), and it includes useful diagnostic criteria aimed at these disorders.

Most other adult screening tests currently in use typically avoid direct questions about specific substances and instead focus on problems the person has experienced with drug use in the past, which can lead to ambiguity and bias in their responses (WHO ASSIST Working Group, 2002). Such tests are effective in screening the risks and the risk factors; however, they do not show sufficient sensitivity in identifying active cases (WHO ASSIST Working Group, 2002). In addition, DSM-5 Level-2 Substance Use Scale is predicted to be useful in clinical practice also due to the fact that disorders included in many clusters in the DSM-5 such as psychotic disorders, bipolar disorders, depression disorders, and anxiety disorders can occur during intoxication or withdrawal related to the ten substances questioned by the scale. It has been shown that the DSM-5 Level-2 Substance Use Scale, as a short self-report scale, improves the evaluation processes of substance use disorders and helps clinicians by detecting some of the substance use disorders that could not be detected by the toxicology examination (Sullivan et al. 2020).

The Addiction Profile Index (API) used in this study for concurrent validation is a 37-item self-report scale (Ögel et al. 2012). API consists of 5 subscales that assess the characteristics of substance use, the effects of substance use on life, craving for substance use, the motivation to quit substance use, and the diagnostic criteria of addiction.

The twelve questions in the 5-point Likert type Substance Use Characteristics Subscale queries alcohol and other substances and the frequency of use of these substances. The answer choices provided are "Never", "Only 1-2 times", "1-3 times monthly", "1-5 times weekly", and "Almost every day". Other subscales, the Effects of Substance Use on User's Everyday Life Subscale, Severe Craving for Substance Use Subscale, Motivation to Quit Substance Use Subscale, and the Diagnostic Criteria of Addiction Subscale consist of 10, 4, 3 and 8 items, respectively. These subscales are also designed in a 5-point Likert format. On the other hand, the answer choices provided in these subscales

range from “never” to “almost always”. The Craving for Substance Use Subscale and the Motivation to Quit Substance Use Subscale assess the characteristics of substance use in the last week, while other subscales assess the characteristics of substance use in the last year.

The DSM-5 Substance Use Scale, which was developed following the numerous innovations in the field of Substance Use-Related Disorders in the DSM-5 in order to provide a more up-to-date approach to the severity and subgroups of substance use disorders compared to other scales prepared before the DSM-5, provides a brief self-report of recent drug use, assessing the individual’s frequency of use of various substances in the past 2 weeks. The scale queries 12 frequently used substance groups by specifying these frequently used substances and their names in parentheses. The individual evaluates how often he/she uses each substance group by choosing one of the five choices (0=Never; 1=One or Two Days; 2=Several Days; 3=More than Half the Days and 4=Almost Every Day) given in each item. The expression “without a doctor’s prescription, or above the recommended dose or for longer than recommended” is used to distinguish prescription drug abuse.

The studies conducted to identify preventable risk factors and effective treatments for substance use disorders require the use of reliable and valid assessment scales. In this context, given the need for an easily applicable short self-report scale that allows screening of substance use disorders addressed in the DSM-5 diagnostic criteria in the field of addiction and assessing the severity of these disorders, the objective of this study is to demonstrate the validity and reliability of the Turkish version of the DSM-5 Substance Use Scale.

METHOD

Translation of the DSM-5 Substance Use Scale

The translation of the DSM-5 Substance Use Scale was carried out by a team of psychiatrists. The translated text was checked and after a consensus was reached on the created text, the comprehensibility of the scale questions was checked. Subsequently, the translated text was translated back into English by another psychiatrist. This second translated text was checked by the research team, and the full text of the scale was created after a consensus was reached on the final text.

Sample Group

Patients receiving treatment in inpatient or outpatient psychiatry clinics were included in the study. The criteria for inclusion in the study were determined as being between the ages of 18-65, meeting the diagnostic criteria for any substance use disorder according to the DSM-5 criteria, having the mental capacity to fulfill the research instructions, and being

able to complete the scales both physically and mentally. On the other hand, the criteria for exclusion from the study were determined as meeting the diagnostic criteria for any mental disorder other than substance use disorders according to DSM-5 criteria, and having a physical or neurological disease that requires continuous treatment. In the end, the patient group consisted of 54 patients who met the inclusion criteria, and the control group consisted of 100 healthy volunteers studying at Celal Bayar University Faculty of Medicine with age and gender characteristics that match the patient group. Ethics committee approval of the study was received from Manisa Celal Bayar University Ethics Committee (Approval Date: 14/01/2015, Approval No: 20478486-24). Informed consent was obtained from the individuals who participated in the study.

Assessment Tools

Sociodemographic Data Form: Participants’ age, gender, educational level, marital status, occupation, type of family, place of residence and upbringing, socioeconomic level, and alcohol and cigarette use information were obtained using a sociodemographic data form.

DSM-5 Substance Use Scale: DSM-5 Level 2 Substance Use Scale has been adapted from the NIDA-Modified ASSIST by the American Psychiatric Association. The reliability study of the scale was carried out by Narrow et al. within the scope of DSM-5 field studies (Narrow et al. 2013). The 12-item scale evaluates prescription drug abuse and illicit substance use in individuals aged 18 and over and the severity thereof. Accordingly, the individual is asked to indicate the use of substances included in the substance groups specified as painkillers (Aldolan, Contramal), stimulants (such as Ritalin, Concerta, and Akineton), sedatives or tranquilizers (such as Nervium, Diazem, Ativan, Xanax, and Rivotril) or other pill-like drugs (such as Seroquel, Lyrica, Uropan, and Neurontin), cannabis, synthetic cannabinoids (such as Bonsai), cocaine or crack, nightclub pills (such as Ecstasy) hallucinogens (such as lysergic acid diethylamide - LSD), heroin, volatiles or solvents (such as thinner, adhesive (Bally), lighter fluid, acetone), methamphetamine (such as doping) in the period covering the last two weeks, according to the frequency of use. Each item in the scale is assigned to one of the five answer choices (0=Never; 1=One or Two Days; 2=Several Days; 3=More than Half the Days and 4=Almost Every Day). Since each item of the scale queries the use of a different substance, the score of each item is evaluated separately. Scores of more than one item higher than 0 indicate more severe and multiple substance use. In order to monitor the changes in the severity of alcohol, tobacco/nicotine, drug or illegal substance use of the individual over time, the scale can be applied at regular intervals as clinically indicated, depending on the individual’s symptoms and treatment status. Consistently high scores in

one area may indicate important and problematic areas that may need further evaluation, treatment, and follow-up.

Addiction Profile Index (API): API is a self-report scale that evaluates addiction in five different dimensions, i.e. characteristics of substance use, the effects of substance use on user's everyday life, severe craving for substance use, the motivation to quit substance use, and the diagnostic criteria of addiction, and determines the severity of addiction (Ögel et al. 2012). The Substance Use Characteristics Subscale consists of 12 questions querying the types and frequency of use of the substances used. Other subscales, the Effects of Substance Use on Life Subscale, Craving for Substance Use Subscale, Motivation to Quit Substance Use Subscale, and the Diagnostic Criteria of Addiction Subscale consist of 10, 4, 3 and 8 items, respectively. There is also a craving for substance use, a substance use cessation self-report form and a practitioner form. The scale can evaluate alcohol and non-alcoholic substance use. The validity and reliability studies of the scale, which was developed by Ögel et al. were conducted in 2012 (Ögel et al. 2012).

Statistical Analysis

The statistical analyses of the findings obtained in the study were carried out using the SPSS 22.0 (Statistical Package for social Sciences for Windows, version 22.0, IBM Corp., Armonk, NY, U.S., 2013) software package. Descriptive statistics (minimum, maximum, mean, standard deviation, frequency, percentage, and median values) were used to express the study data. The conformity of the variables to the normal distribution was tested with the Shapiro Wilk test, Q-Q graphs and histograms. Student's t-test was used for the evaluation of quantitative data determined to conform to the normal distribution between two groups, and Mann-Whitney U test was used for the evaluation of quantitative data determined not to conform to the normal distribution between two groups. Yates' correction for continuity or Yates' chi-square test was used to evaluate the qualitative data.

In the reliability analysis, Cronbach's alpha coefficient was used for internal consistency analysis, and Pearson's correlation analysis was used for item-total score correlation. Receiver operating characteristic (ROC) analysis was used in the validity analysis. The probability (p) values of $p < 0.05$ and $p < 0.01$ were deemed to indicate significance levels.

RESULTS

Sociodemographic Characteristics

The study was conducted with a total of 154 participants, 60 (39%) female and 94 (61%) male. Of these participants, 54 (35.1%) were included in the patient group and 100 (64.9%) were included in the control group. Patient group

consisted of individuals who were diagnosed with any substance use disorder according to the DSM-5 criteria, whereas the control group consisted of volunteers who did not have any mental or physical illness at the time of the study. The mean age of the participants was calculated as 26.97 ± 10.20 (min.: 18, max.: 63) years. The mean age of the patient group was 27.17 ± 7.88 (min.: 18, max.: 55) years, whereas the mean age of the control group was 26.87 ± 11.30 (min.: 18, max.: 63) years. There was no statistically significant difference between the patient and control groups in terms of age ($p > 0.05$). In terms of gender, 5.6% ($n=3$) of the patient group were female and 94.4% ($n=51$) were male, whereas 57% ($n=57$) of the control group were female and 43% ($n=43$) were male. There was a statistically significant difference between the patient and control groups in terms of gender ($p < 0.001$; $p < 0.01$). The ratio of males in the patient group was significantly higher than that of the control group (94.4% vs. 43%).

In terms of educational level, 1.9% ($n=1$), 14.8% ($n=8$), 50% ($n=27$), 31.5% ($n=17$) and 1.9% ($n=1$) of the patient group were literate, elementary school graduates, middle school graduates, high school graduates and university graduates, respectively; whereas 3% ($n=3$), 53% ($n=53$), and 44% ($n=44$) of the control group were elementary school graduates, high school graduates and university graduates, respectively. There was a statistically significant difference between the patient and control groups in terms of educational level ($p < 0.001$; $p < 0.01$). The rate of those whose educational level was less than high school was significantly higher in the patient group than in the control group (66.7% vs. 3%).

In terms of marital status, 18.5% ($n=10$) and 81.5% ($n=44$) of the patient group, as compared to 28% ($n=28$) and 72% ($n=72$) of the control group, were married and single, respectively. There was no statistically significant difference between the patient and control groups in terms of marital status ($p > 0.05$).

The rate of participants with no history of alcohol or cigarette use was 50.6%. On the other hand, 18.5%, 2.6%, and 27.3% of the participants had a history of smoking, alcohol use, and both alcohol and cigarette use, respectively. All patients had cigarette or alcohol use, as compared to only 22% ($n=22$) of the control group. There was a statistically significant difference between the patient and control groups in terms of smoking or alcohol use ($p < 0.001$; $p < 0.01$).

It was determined that 90.7% ($n=49$) of the patients and 94% ($n=94$) of the control subjects had a physical disease. There was no statistically significant difference between the patient and control groups in terms of frequency of having a physical disease ($p > 0.05$).

Additionally, it was determined that 48.1% ($n=26$) of the patients and 16% ($n=16$) of the control subjects had

a psychiatric history. There was a statistically significant difference between the patient and control groups in terms of frequency of having a psychiatric disorder ($p < 0.001$; $p < 0.01$).

In terms of family psychiatric history, 87% ($n=47$) of the patients, as compared to 85% ($n=85$) of the control subjects, were determined to have a family psychiatric history. There was no statistically significant difference between the patient and control groups in terms of frequency of participants with a familial psychiatric history ($p > 0.05$).

All sociodemographic and clinical characteristics of the volunteers participating in the study are given in Table 1.

In terms of type of substance use, it was determined that 26.6%, 12.3%, 26.6%, and 2.6% of the participants had

a history of antidepressant drug use, antipsychotic drug use, buprenorphine/naloxone use and anxiolytic drug use, respectively.

Of the patients ($n=54$) diagnosed with substance use disorder included in the study, 88.7% had opiate use disorder, 5.6% had polysubstance use disorder, 5.6% had other (unknown) substance (synthetic cannabinoid) use disorder, and 1.8% had cannabis use disorder (Table 2).

Mean and median API Substance Use Characteristics Subscale scores of the patient group were 11.61 ± 4.84 and 10.5 (min.: 0, max.: 24), respectively; whereas the mean and median API Substance Use Characteristics Subscale scores of the control group were 0.64 ± 1.10 and 1.5 (min.: 0, max.: 4), respectively.

Table 1. Socio-demographic Features of the Patient and Control Groups (N=154)

Socio-demographic Features		Patient Group (n=54)	Control Group (n=100)	Test Value	P Value
Age (year)	Min-Max	18-55	18-63	$t=0.191$	$p=0.849$
	Mean \pm SD	27.17 \pm 7.88	26.87 \pm 11.30		
Sex	Female	3 (%5.6)	57 (%57)	$\chi^2=36.889$	$p < 0.001^{**}$
	Male	51 (%94.4)	43 (%43)		
Education Level	Below High School	36 (%66.7)	3 (%3)	$\chi^2=71.829$	$p < 0.001^{**}$
	High School and Above	18 (%33.3)	97 (%97)		
Marital Status	Married	10 (%18.5)	28 (%28)	$\chi^2=1.224$	$p=0.269$
	Single	44 (81.5)	72 (%72)		
Alcohol use and smoking	Yes	54 (%100)	22 (%22)	$\chi^2=82.256$	$p < 0.001^{**}$
	No	0 (%0)	78 (%78)		
Having children	Yes	12 (%22.2)	19 (%19)	$\chi^2=0.070$	$p=0.791$
	No	42 (%77.8)	81 (%81)		
Physical Disease	Yes	49 (%90.7)	94 (%94)	$\chi^2=0.178$	$p=0.673$
	No	5 (%9.3)	6 (%6)		
Psychiatric History	Yes	26 (%48.1)	16 (%16)	$\chi^2=16.686$	$p < 0.001^{**}$
	No	28 (%51.9)	84 (%84)		
Psychiatric Family History	Yes	47 (%87)	85 (%85)	$\chi^2=0.011$	$p=0.918$
	No	7 (%13)	15 (%15)		

Quantitative data are expressed as Min-Max and Mean \pm Standard Deviation, and qualitative data are expressed as n (%).
t: Student-t Test, χ^2 : Chi-Square Test with Continuity (Yates) Correction * $p < 0.05$ ** $p < 0.01$

Table 2. Substances Used By Patients Diagnosed with Substance Use Disorder (n=54)

Substances	n	%
Opioid	47	87
Mixed Substance	3	5.6
Other Substance (synthetic cannabinoid)	3	5.6
Cannabis	1	1.8

Table 3. Addiction Profile Index (API) Evaluation of Patient and Control Groups

API	Patient Group (n=54)	Control Group (n=100)	Test Value	P Value
	Min-Max	Min-Max		
	Mean±SD (Median)	Mean±SD (Median)		
Substance Use Features	0-24 11.61±4.84 (10.5)	0-4 0.64±1.10 (1.5)	Z=-10.540	p<0.001**

Z: Mann Whitney U Test. **p<0.01, Mean±SD: Mean±Standart Deviation

Table 4. Item Analysis Results for the DSM-5 Substance Use Scale

DSM-5 Substance Use Scale	Mean±SD	Item-Total Correlation	Scale Cronbach's Alpha Coefficient when the item is removed
ITEM A	0.12±0.51	0.303	0.797
ITEM B	0.09±0.52	0.353	0.794
ITEM C	0.17±0.67	0.555	0.777
ITEM D	0.21±0.77	0.522	0.778
ITEM E1	0.30±0.83	0.620	0.767
ITEM E2	0.27±0.86	0.450	0.785
ITEM E3	0.25±0.74	0.638	0.768
ITEM F	0.18±0.65	0.643	0.770
ITEM G	0.06±0.42	0.524	0.786
ITEM H	1.10±1.74	0.531	0.818
ITEM I	0.07±0.40	0.565	0.785
ITEM J	0.03±0.21	0.196	0.803

Total Cronbach Alpha Coefficient: 0.800, Mean±SD: Mean±Standart Deviation

API Substance Use Characteristics Subscale scores of the patient group were found to be statistically significantly higher than those of the control group ($p<0.001$; $p<0.01$) (Table 3).

Reliability Analyses

The item analysis and internal consistency coefficients of the DSM-5 Substance Use Scale are given in Table 4. The overall Cronbach alpha internal consistency coefficient of the scale was found to be quite high with 0.800. The item-total score correlation values of the items in the scale ranged from 0.196 to 0.643. The Cronbach alpha coefficients obtained when an item was removed from the scale were found to be between 0.767 and 0.803. Item-total score correlations were found to be higher than $r>0.300$, which is the generally accepted reference value, in 92% of all items. Item-total score correlation was lower than the accepted reference value in item J only. However, considering that this item is an essential item of the assessment tool and that the Cronbach's alpha coefficient (0.803) obtained when the item was removed was not found to be higher than the value obtained from the overall scale, item J was not removed from the scale (Table 4).

Validity Analyses

Scale-Related Validity

The correlation coefficients between API Substance Use Characteristics Subscale scores and DSM-5 Substance Use Scale for all participants, the patients and control subjects were found to be high (0.806), moderate (0.527) and low (0.125), respectively ($p<0.001$ and $p<0.01$; $p<0.001$ and $p<0.01$; and $p=0.214$ and $p>0.05$, respectively).

ROC Analysis

The sensitivity and specificity of the Substance Use Scale were evaluated by ROC analysis in order to determine its functionality. The ROC curve resulted from the joint analysis of the patients diagnosed with substance use disorder and the control subjects who were not diagnosed with substance use disorder is given below. The area under the ROC curve for the DSM-5 Substance Use Scale was found to be 0.963 ($p<0.001$; 95% Confidence Interval (CI): 0.921-1.004) (Figure 1).

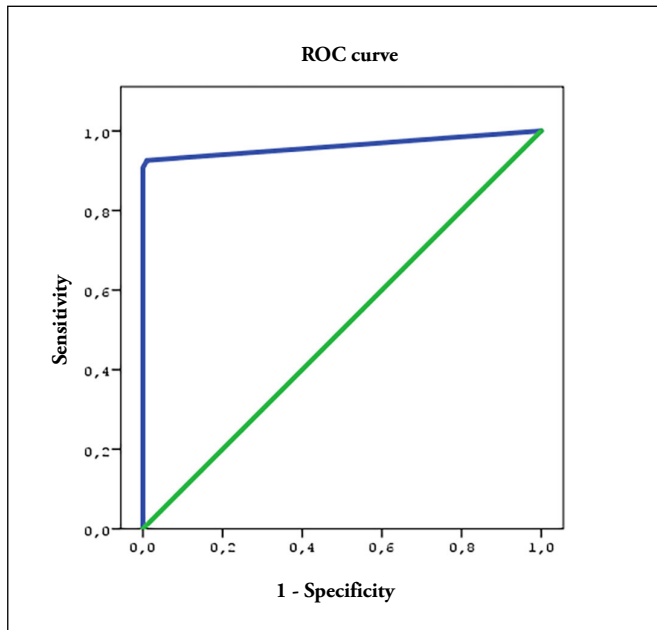


Figure 1. ROC curve shows the specificity and sensitivity of the scale

DISCUSSION

Today, with the increasing prevalence of multiple substance use, there is a need for easily applicable assessment scales to be used in diagnosis, treatment and follow-up processes. In this context, it has been shown in this study that the Turkish version of the DSM-5 Substance Use Scale, which serves the said need, is reliable and valid.

The reliability studies conducted for the DSM-5 Substance Use Scale revealed an internal consistency coefficient of 0.800 and item-total score correlation coefficients between 0.196 and 0.643 ($p < 0.0001$). Item-total score correlations were found to be higher than $r > 0.300$, which is the generally accepted reference value, in 92% of all items. The item-total score correlation coefficients of all items were higher than 0.20, except for scale's last item about methamphetamine use, the item-total score coefficient of which was found to be very close to 0.20. This result can be attributed to the relatively low use of the said item in the study sample. The rate of methamphetamine use was found to be 2.5% in the sample of this study, as compared to 7.8%, which is the rate of methamphetamine use among inpatients treated in addiction treatment centers in 2018 according to the 2019 Turkey Drug Report (Turkey Drug Report, 2019). On the other hand, in another study conducted in Turkey, the rate of amphetamine/methamphetamine group substance use was found to be 16.3% based on the laboratory analysis of urine samples taken to detect addictive substances other than alcohol (Karakükcü et al. 2018). It is important to note that item J is an essential item for the assessment tool and the Cronbach alpha coefficient (0.803) obtained when item J was

removed from the scale was not found to be higher than the Cronbach alpha coefficient obtained from the overall scale.

The Cronbach alpha coefficient for CAGE, which was developed by John A. Ewing in 1984, was obtained as 0.78 (Ewing, 1984). The Cronbach alpha coefficient determined for AUDIT developed by WHO was found between 0.80 and 0.98 in studies conducted in different countries with a median value of 0.93 (Saunders et al. 1993). The item-total score correlation coefficients were found to be between 0.53 and 0.81. Cronbach's alpha coefficient was found to be 0.80 for DUDIT, which was developed in parallel with AUDIT, and the item-total score correlation coefficients of DUDIT ranged between 0.38 and 0.78 (Berman et al. 2005). On the other hand, the Cronbach's alpha coefficient and the item-total score correlation coefficients of the Turkish version of DUDIT were found as 0.93 and between 0.64 and 0.81, respectively, within the scope of the respective validity and reliability studies (Evren et al. 2014). The Cronbach's alpha coefficients of MAST and SMAST (Short Michigan Alcoholism Screening Test) were found as 0.87 and 0.75, respectively, within the scope of the respective validity and reliability studies (Gibbs 1983). In addition, the Cronbach's alpha coefficients of API and its subscales were found as 0.89 and between 0.63 and 0.86, respectively, within the scope of the respective validity and reliability studies. Additionally, the item-total score correlation coefficients were found to be between 0.42 and 0.89 (Ögel et al. 2012). As for the correlations of the API subscales with the total scores, the correlation coefficients of the Substance Use Characteristics Subscale, the Effects of Substance Use on Life Subscale, Craving for Substance Use Subscale, Motivation to Quit Substance Use Subscale, and the Diagnostic Criteria of Addiction Subscale were found as 0.64, 0.82, 0.75, 0.43 and 0.82, respectively. Accordingly, all the said correlations were found to be statistically significant ($p < 0.01$) (Ögel et al. 2012). The Spearman-Brown and Guttman coefficients, i.e. the split-half correlations, were found as 0.83 and 0.82, respectively, for the whole scale. The internal consistency analysis of the 16-item Turkish version of the Stages of Change Readiness and Treatment Eagerness Scale (SOCRATES) revealed the Cronbach's alpha coefficients as 0.77 for awareness, 0.74 for dilemma, 0.78 for taking steps, and 0.85 for the whole scale {Formatting Citation}. The reliability study of the PACS revealed the Cronbach's alpha coefficient of the scale as 0.92 (Flannery et al. 1999). The Cronbach's alpha value of the Substance Craving Scale, which is an adaptation of PACS for addicts who use non-alcoholic substances, was found to be 0.84 for the whole scale, and the item-total score correlation values for each item were found to be between 0.75 and 0.82 (Evren et al. 2011). The Cronbach's alpha coefficient of the Turkish version of DAST-10 was found as 0.87 for the whole scale within the scope of the respective validity and reliability studies (Evren et al. 2014). The item-total score correlation

coefficients of the Substance Use Scale prepared for the DSM-5 ranged from 0.196 to 0.643. The analysis of the internal consistency coefficient and item-total score coefficients of the scale revealed that the reliability of the scale is good and that the items are compatible with each other and are representative of the entire scale. The item-total score correlation coefficients, except the one for the scale's last item, which is about methamphetamine use, ranged from 0.303 to 0.643. These values are similar to those of scales such as DUDIT and API that measure substance use, and indicate the reliability of the Substance Use Scale prepared for the DSM-5. The Cronbach's alpha coefficient of the DSM-5 Substance Use Scale was found as 0.80, which is comparable to the internal consistency coefficients of the CAGE, DUDIT, and API scales.

ROC analysis was performed to test the validity of the DSM-5 Substance Use Scale, and the area under the curve (AUC) was calculated as 0.963 ($p < 0.001$; 95% CI: 0.921-1.004). The correlation analysis of the DSM-5 Substance Use Scale with API revealed the correlation coefficient as $r = 0.806$ ($p < 0.0001$).

In the study conducted by Sullivan et al. in 2019, in which the reliability of the DSM-5 Substance Use Scale was assessed in comparison with the toxicology measurements, the sensitivity and specificity values of the scale for painkillers and heroin use were found as 100% and 90.2%, for cannabis use as 82.6% and 88.9%, for cocaine/crack as 50% and 96%, and for sedatives or tranquilizers as 35.7% and 77.8%, respectively (Sullivan et al. 2020). The explanatory factor analysis carried out within the scope of the validity analyses of the API revealed four factors with eigenvalues greater than 1, which explained 52.39% of the total variance. Additionally, the explanatory factor analysis carried out for the total scores of the subscales revealed one factor with an eigenvalue greater than 1, which explained 50.7% of the total variance. Factor loads were calculated as 0.64, 0.84, 0.74, 0.47, and 0.85 for Substance Use Characteristics Subscale, the Effects of Substance Use on User's Everyday Life Subscale, Severe Craving for Substance Use Subscale, Motivation to Quit Substance Use Subscale, and the Diagnostic Criteria of Addiction Subscale, respectively (Ögel et al. 2012). In the ROC analysis for the Diagnostic Criteria of Addiction Subscale, AUC was calculated as 0.90. The analysis of the Diagnostic Criteria of Addiction Subscale over 6 items indicated that the sensitivity and specificity values of the subscale when the cut-off value was taken as 4 were 0.85 and 0.78, respectively (Ögel et al. 2012). The correlation coefficients of API with MAST, Addiction Severity Index (ASI) Medical Subscale, ASI Drug and Alcohol Use Subscale, ASI Legal Subscale, and ASI Family/Social Subscale were calculated as 0.31, 0.25, 0.4, 0.32, and 0.39, within the scope of the scale-related validity analyses performed for API. Additionally, the correlation coefficients between the API Motivation to

Quit Substance Use Subscale and SOCRATES and PACS were found as 0.34 and 0.44, respectively.

The specificity of the Turkish version of CAGE was determined as 86% in the study conducted by Gül et al. On the other hand, the sensitivity and specificity of the scale reached 100% and 79%, respectively, when evaluated together with blood gamma glutamyl transferase measurement, and AUC was calculated as 0.98 (Gül et al. 2005). In the study of Gomez et al. the sensitivity and specificity of AUDIT were calculated as 81.4% and 94.6%, respectively, and AUC was found as 0.97 (Gomez et al. 2005). The validity analyses for DUDIT conducted based on the diagnosis of ICD-10 (International Classification of Diseases, Tenth Revision) addiction syndrome indicated that the sensitivity and specificity values of DUDIT when the cut-off value was taken as 25 were 90% and 88%, respectively, and AUC was calculated 0.95 (Berman et al. 2005). The validity analysis of the Turkish version of DUDIT revealed AUC as 0.952 (Evren et al. 2014). The sensitivity and specificity values of the Turkish version of MAST when the cut-off value was taken as 5 were found as 79% and 99%, respectively (Coskunol et al. 1995). The reliability studies conducted for the Turkish version of DAST-10 indicated that the sensitivity and specificity values when the cut-off value was taken as 4 were 0.88 and 0.74, respectively, and AUC was 0.897 (Evren et al. 2014). Additionally, the AUC found within the scope of the validation analyses and the scale's high level of correlation with the API indicated that the validity of the scale is ensured and that it has sufficient specificity and sensitivity.

Both construct validity and concurrent validation analyses of the scale support that the scale can be used in a valid way.

Limitations of the Study

One of the limitations of this study was the relatively small size of the sample group consisting of symptomatic patients. Another limitation was that even though the consents of the participants were taken and the researchers were psychiatrists, structured clinical interview had not been applied to the control group for diagnostic research. Nonetheless, it was possible to perform all statistical analyses with a sample group of this size. On the other hand, the fact that the study sample was representative of the patient population, which demonstrated the clinical usability of the scale, was study's primary strength.

CONCLUSION

The findings of this study revealed that the Turkish version of the DSM-5 Substance Use Scale is reliable and valid. The DSM-5 Substance Use Scale differs from other scales in that it is easy to administer and allows for a detailed assessment of the types of substances used. Therefore, it is highly likely that the use of the scale in psychiatry practices and future research will benefit clinicians.

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