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RESEARCH ARTICLE

Turkish validity and reliability study of the Alcohol, Smoking, and Substance Involvement Screening Test (ASSIST) Scale

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ABSTRACT

Objective: The use of alcohol, cigarettes, and substances contributes to the global burden of disease and causes acute harms, including high-dose use, as well as chronic problems such as addiction and infectious diseases. Among preventable diseases, smoking, alcohol, and substance use have been among the top ten causes of illness-related mortality.

Method: This study aimed to examine the Turkish validity and reliability of the Alcohol, Smoking, and Substance Involvement Screening Test (ASSIST) Scale. Two different sample groups (n=339) were interviewed by experienced clinicians. The Fagerstrom Nicotine Dependence Test (FNDT), Alcohol Use Disorder Identification Test (AUDIT), and Drug Use Disorder Identification Test (DUDIT) were also administered to examine correlations with ASSIST.

Results: To analyze the internal consistency of ASSIST, Cronbach's alpha coefficients were calculated for each group, ranging from 0.70 to 0.98. To examine the factor structure of the scale, exploratory factor analysis was conducted, and the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy was higher than 0.60, while Bartlett's Test of Sphericity was significant (KMO>0.60, $p<0.05$). Based on factor loadings, all items loaded onto a single factor except the "sedatives and hallucinogens" item, in which items 2–4 were grouped in factor 1 and items 6 and 7 were grouped in factor 2. ASSIST Tobacco scores were significantly correlated with FNDT scores (0.70 for Group 1 and 0.74 for Group 2). ASSIST Alcohol scores and total scores were significantly correlated with AUDIT and DUDIT scores, respectively (0.92 for Group 1 and 0.94 for Group 2; 0.91 for Group 1 and 0.90 for Group 2, respectively).

Conclusion: It was concluded that ASSIST v3.1 can be applied to screen for cigarette, alcohol, and substance use/abuse in general psychiatry and psychiatric counseling centers in our country. Future studies conducted in different populations would provide new data regarding the effectiveness of ASSIST and contribute to both the literature and daily practice.

Keywords: Alcohol, Smoking, and Substance Involvement Screening Test (ASSIST), reliability, screening, validity

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INTRODUCTION

Substance use contributes to the global burden of disease, causing acute harms such as high-dose use and chronic problems such as addiction and infectious diseases (1). Globally, in 2016, 4.2% of life-year losses were attributed to alcohol use and 1.3% were attributed to substance use (2). Smoking, alcohol, and substance use are among the top ten preventable causes of death in the United States (3). According to a World Health Organization report, while 35 million people have a substance use disorder, only one out of seven people receives treatment (4). It is estimated that approximately 96 million people in the European Union (29% of the adult population aged 15–64) have tried illicit substances at some point in their lives ((1) According to the results of the Attitude and Behavior Survey toward Tobacco, Alcohol, and Substance Use in the General Population conducted in our country in 2018, 3.1% of individuals aged 15–64 reported having tried at least one substance, including cannabis, at least once in their lifetime. The majority of this group were male users (94%) (5). Although the use of alcohol, tobacco products, and opioids is considered a greater threat in terms of addiction risk, a study conducted in the United States reported that the prevalence of hallucinogen abuse/use disorder in the adult population ranged between 0.6% and 1.7% (6). Similarly, inhalant use rates in the United States have been reported to range between 0.4% and 0.9% (7). As recent data from Turkiye are limited, it appears difficult to provide a reliable prevalence estimate.

Alcohol and other substance abuse also pose risk factors for individuals and their families, leading to various problems in social, financial, legal, and relationship domains. Globally, with the increasing tendency for people to use more than one substance simultaneously or at different times, the overall risks associated with alcohol and substance abuse tend to increase.

Screening and brief intervention describe an approach that aims to identify and provide interventions for substance abuse in general health settings. As health care reform progresses globally and larger numbers of individuals enter the medical system, it is expected that the number of those needing interventions for substance abuse issues will increase. Innovative care delivery models, such as the patient-centered medical home, have acknowledged the need for behavioral health integration and workforce training. The Alcohol, Smoking, and Substance Involvement Screening Test (ASSIST) offers a streamlined mechanism for routine screening for these problems, an efficient short-term intervention to meet the needs of most individuals by assisting them in reducing or stopping hazardous use, knowledge of approved pharmacotherapies for substance use disorders that can be implemented in primary care, and resources for obtaining specialty care when needed (8). A number of screening and assessment approaches have been developed to identify substance abuse. The Alcohol Use Disorder Identification Test has been widely recommended for alcohol screening and evaluation and is applied as a routine screening element in primary care health systems (9). The 10-item version of the Drug Abuse Screening Test (DAST) is among the developed and validated tools for substance use screening and assessment that can be used in primary care populations (10). The Fagerstrom Test for Nicotine Dependence has been widely used in the evaluation of nicotine dependence levels (11). Although the Addiction Severity Scale (ASI) can be used to evaluate alcohol and substance use as a valuable tool, its administration takes between 45–60 minutes, which may be time-consuming in primary care or practical use (12). The use of a screening and evaluation tool that can assess tobacco, alcohol, and substance use together in practice would facilitate the identification of use in individuals.

The Alcohol, Smoking, and Substance Involvement Screening Test Scale is an international instrument developed and approved by the World Health Organization (WHO) to screen alcohol, tobacco products, and substance use in primary care and general health settings (13). ASSIST offers several advantages over instruments such as the Alcohol Use Disorder Identification Test (AUDIT), DAST, or the Fagerstrom Test for Nicotine Dependence. While AUDIT and DAST are substance-specific and focus primarily on alcohol or drug use, ASSIST provides a comprehensive assessment across multiple substance categories, including alcohol, tobacco, opioids, stimulants, cannabis, and hallucinogens. This allows clinicians to detect polysubstance use patterns more effectively. Moreover, ASSIST is grounded in the WHO's cross-cultural validation framework, enabling consistent use in diverse populations and clinical contexts. Its structured scoring system also facilitates risk stratification (low, moderate, high) and guides appropriate intervention planning, making it a more versatile and inclusive screening tool for substance-use problems in both research and clinical settings.

The digital adaptation of ASSIST extends beyond the traditional paper-and-pencil format, enabling users to complete the screening conveniently on mobile devices or online platforms. The ASSIST Checkup—sometimes referred to as ASSIST-Plus—was developed by the University of Adelaide to allow individuals to self-assess their alcohol, tobacco, and other psychoactive substance use, providing immediate personalized feedback and harm-reduction advice when needed (14). This digital version has been shown to save time and resources in clinical settings and can be implemented effectively in primary care, waiting rooms, or telehealth contexts. By combining automated scoring, risk-level stratification, and tailored intervention recommendations, the digital ASSIST represents a significant improvement over the conventional format in terms of accessibility and clinical utility.

Recognition of alcohol or substance use and early intervention are very important in our country, as has been repeatedly emphasized in previous studies. Screening for tobacco products, alcohol, and substance abuse in patients presenting to primary health care services provides an early warning opportunity to inform at-risk populations about the risks of use, which could lead to intervention at early stages. The screening tool appears to have important consequences, including referrals to addiction centers from counseling centers and general health services, especially primary care centers. Although ASSIST was originally designed for use in primary care settings, we aimed for our sample to consist of individuals presenting to a psychiatry outpatient clinic. In Turkiye, a validity and reliability study of the Turkish version was conducted among individuals on parole or probation, demonstrating its suitability for that group (15). However, the limited number of participants using inhalants, hallucinogens, or sedatives represents a notable limitation of that study.

Therefore in this study, we aimed to translate the scale into Turkish and to evaluate its validity and reliability.

METHODS

Participants

The study was conducted between September 2019 and April 2022. It was designed with two different sample groups: the first group (n=209) included participants who applied to the Erenkoy Training and Research Hospital psychiatry outpatient clinic, while the second group (n=130) included participants who applied to the Erenkoy Training and Research Hospital Addiction Counseling and Detoxification Centers and Counseling Centers. Interviews with the participants were conducted by psychiatrists and clinical psychologists who took part in the research. The inclusion criteria were literacy, being between the ages of 18 and 65, and volunteering to participate in the study. The exclusion criteria were defined as the presence of active mental disorders (primary psychotic disorder, primary mood disorder, organic mental disorder) or physical illness (chronic medical illnesses) that might hinder the interview, as well as being intoxicated or in a withdrawal stage from alcohol or substances.

The study was approved by the Erenkoy Training and Research Hospital Local Ethical Committee (dated 08.10.2019, protocol no: 55), and all study procedures were designed in accordance with the Declaration of Helsinki. Written informed consent was obtained from all participants after providing verbal information about the study.

Translation Procedures

To determine the language validity of the ASSIST, the items in the English version of the scale were translated into Turkish by two experienced clinicians and two experts who graduated from the Department of English Language and Literature. The translated texts were compared to create a final version, and discrepancies were revised. The Turkish form was then back-translated into English by two experts, and the back-translated version was evaluated by clinicians for inconsistencies with the original version. Finally, to evaluate the language clarity and intelligibility of this version of the scale, 15 participants and 15 health care workers completed the scale. The assessments were examined for incongruent expressions or misinterpretations, and feedback was obtained regarding the final adapted version. Additionally, two researchers from the team administered the scale in a pilot study to 10 patients who applied to the counseling center for substance use disorder (SUD), and no problems with language comprehension were observed.

Instruments

Alcohol, Smoking, and Substance Involvement Screening Test (ASSIST)

The first version of ASSIST (v1.0) was developed by the WHO in 1997. The scale was designed to be administered more quickly than previous diagnostic

substance use scales and to have the ability to screen for all risky substances/drugs, not only alcohol or tobacco products. It was also designed for use in primary care treatment centers and to have cross-cultural compatibility. The newer version, ASSIST v3.0, was later revised to ASSIST v3.1, which was planned for clinical use in health centers, while v3.0 was recommended for research studies.

ASSIST v3.1 is an 8-item paper-and-pencil questionnaire administered by a healthcare worker and takes approximately 5–10 minutes to complete. ASSIST is culture-independent and can be used in many cultures; it is designed to screen for the use of tobacco products, alcohol, marijuana, cocaine, amphetamine-type stimulants, tranquilizers, hallucinogens, inhalants, opioids, and "other" substances.

Total score points are calculated by summing the scores of questions 2 through 7. Responses to the substance use by injection item (S8) are not included in the substance use scoring; however, use of substances by injection is considered a high-risk behavior associated with overdose, addiction, Human Immunodeficiency Virus (HIV), Hepatitis C Virus (HCV), and Hepatitis B Virus (HBV) infections, as well as more severe substance-related problems.

The ASSIST scale assigns a risk score for each substance, and these scores are used to initiate brief interventions with patients regarding their substance use. Scores for each substance fall into one of three risk categories: low, moderate, or high. The categories are defined as follows: low risk (0–10 points for alcohol; 0–3 points for other substances), moderate risk (11–26 points for alcohol; 4–26 points for other substances), and high risk (>26 points for alcohol and other substances). After the risk assessment, the most appropriate intervention ("no treatment needed," "short intervention," or "expert assessment") is determined for that level of use. In addition, ASSIST obtains information from patients about substance use and related problems both over the lifetime and within the last three months. The scale results can identify many substance-related problems such as intoxication, regular use, addiction, high-risk use, and drug injection (13).

Fagerstrom Nicotine Dependence Test (FNDT)

The Fagerstrom Nicotine Dependence Test was developed by Fagerstrom and is widely used to evaluate the level of nicotine addiction in smokers (11). The test contains six questions, and the level of addiction is evaluated according to the responses. The highest score that can be obtained is 10; scores of 0–3 indicate low, 4–6 indicate moderate, and 7–10 indicate high levels of addiction. A Turkish reliability study was conducted by Uysal et al. (16), and the test was found to be moderately reliable (Cronbach's alpha: 0.56).

Alcohol Use Disorder Identification Test (AUDIT)

The scale was designed in 1989 and developed by Babor et al. (17). AUDIT is a 10-item scale that assesses drinking habits, alcohol consumption levels, and alcohol-related problems. The first three questions indicate risky alcohol use: the fourth, fifth, and sixth questions indicate dependence symptoms, while the remaining questions indicate alcohol abuse. Although different cut-off points have been used in studies, the recommended cut-off point is 8, which is used to identify potentially risky alcohol use. The Turkish translation of the scale was conducted by Saatcioglu et al. (18) The Cronbach's alpha coefficient was reported as 0.59 for the first interviewer and 0.65 for the second interviewer.

Drug Use Disorder Identification Test (DUDIT)

DUDIT is an 11-item questionnaire developed to identify substance use. The scale, similar to the AUDIT, was developed by Berman et al. in 2005 (19). Total scores range from 0 to 44, with higher scores indicating more severe drug use problems. The Turkish validity study of DUDIT was conducted by Evren et al. (20), and Cronbach's alpha coefficient was found to be 0.93.

Statistical Analysis

Descriptive statistics for age, gender, education, and occupational status, including the mean scores of self-reported psychometric scales, were reported. Cronbach's alpha coefficient, item-total score correlations, and Cronbach's alpha coefficients if an item was deleted were used to analyze the scale's reliability. Exploratory factor analysis was performed using principal component analysis with varimax rotation, and factors with an eigenvalue greater than 1 and items with factor loadings greater than 0.35 were taken into consideration. Correlations between ASSIST and other clinical measures, including the AUDIT, DUDIT, and Fagerstrom Nicotine Dependence Test (FNDT) scales, were examined using the intraclass correlation test. A p value of <0.05 was accepted as the level of significance. Analyses were conducted using SPSS v26.0 and AMOS v26.0 software.

Table 1: Descriptive statistics

Descriptive statistics	Group 1		Group 2		Descriptive statistics	Group 1		Group 2	
	n	%	n	%		n	%	n	%
Gender					Smoking				
Male	108	51.7	119	91.5	None	78	37.3	39	30
Female	101	48.3	11	8.5	Yes	131	62.7	91	70
Education					Alcohol use				
Illiteracy	7	3.3	0	0	None	147	70.3	48	36.9
Literacy	17	8.2	3	2.4	Yes	62	29.7	82	63.1
Primary school	27	13	2	1.5	Drug use				
Secondary school	14	6.7	16	12.3	None	182	87.1	119	91.5
High school	37	17.8	32	24.6	Yes	27	12.9	11	8.5
University	107	51	77	59.2	Psychiatric comorbidity				
Relationship					None	2	1	59	45.4
Single	112	53.6	65	50	Major depression	54	25.8	37	28.4
Married	75	35.8	50	38.4	Anxiety disorder	63	30.1	20	15.4
Widowed	6	2.9	5	3.9	Bipolar disorder	14	6.7	4	3.1
Seperated	16	7.7	10	7.7	Schizophrenia	31	14.8	3	2.3
Work					ADHD	11	5.3	0	0
Unemployed	47	22.4	49	37.9	Eating disorder	34	16.3	7	5.4
Housewife	39	18.6	6	4.6	History of parole/probation				
Worker	69	33	39	30.2	None	197	94.2	129	99.2
Tradesmen	13	6.2	30	23.2	Yes	12	5.8	1	0.8
Retired	7	3.3	2	1.5	Family history of alcohol/substance use				
Student	34	16.5	3	3.1	None	189	90.4	107	82.3
Physical comorbidity					Yes	20	9.6	23	17.7
None	160	76.5	12	9.3	Family history of primary psychiatric disorder				
Yes	49	23.5	118	90.7	None	167	79.9	104	80
					Yes	42	20.1	26	20

ADHD: Attention deficit hyperactivity disorder.

RESULTS

Sociodemographic Data

The proportions of male and female participants in the first group were similar (51.7% male, 48.3% female), whereas the majority of participants in the second group were male (92.9%). Single individuals predominated in both groups (53.6% and 49.2%, respectively). Compared to the first group, the second group had a higher rate of alcohol use (70.3% vs. 36.9%). Substance users were in the minority in both groups (12.9% and 7.1%, respectively). Most participants in the first group, as expected, had one or more psychiatric diagnoses (Table 1).

ASSIST Risk Levels

In both groups, individuals who required brief intervention or more intensive intervention related to tobacco use predominated. The frequency of groups requiring intervention for alcohol use and other substance use was higher in the second group (Table 2).

Reliability Analysis and Factor Structure of the ASSIST

To analyze the consistency of ASSIST, Cronbach's alpha coefficients were calculated for each group, ranging from 0.70 to 0.98 (Table 3).

To evaluate the factor structure of the scale, exploratory factor analysis was performed. The Kaiser-

Table 2: ASSIST risk level

Drug	No intervention n (%)	Brief intervention n (%)	Intense intervention n (%)
Group 1 (n=209)			
Tobacco	99 (47.4)	82 (39.2)	28 (13.4)
Alcohol	167 (79.9)	24 (11.5)	18 (8.6)
Cannabis	185 (88.5)	15 (7.2)	9 (4.3)
Cocaine	198 (94.7)	6 (2.9)	5 (2.4)
Amphetamine	196 (93.8)	6 (2.9)	7 (3.3)
Inhalants	202 (96.7)	1 (0.5)	6 (3)
Sedatives/hypnotics	189 (90.4)	15 (7.2)	5 (2.4)
Hallucinogens	201 (96.2)	4 (1.9)	4 (1.9)
Opiates	200 (95.7)	3 (1.3)	6 (3)
Other	196 (93.8)	8 (3.8)	5 (2.4)
Group 2 (n=130)			
Tobacco	5 (3.3)	63 (48.5)	60 (46.2)
Alcohol	31 (23.2)	78 (60)	18 (13.8)
Cannabis	81 (62.6)	35 (26.9)	11 (8.5)
Cocaine	68 (52.4)	55 (42.3)	5 (3.3)
Amphetamine	75 (57.1)	48 (36.9)	4 (3)
Inhalants	106 (81.5)	18 (17)	2 (1.5)
Sedatives/hypnotics	107 (82.3)	19 (16.5)	2 (1.5)
Hallucinogens	108 (84.3)	17 (13.2)	3 (2.5)
Opiates	90 (69.2)	33 (25.4)	5 (3.4)
Other	35 (27.3)	89 (69.5)	4 (3.2)

ASSIST: Alcohol, Smoking, and Substance Involvement Screening Test.

Table 3: Reliability statistics

Drug	Cronbach's Alpha (Group 1)	Cronbach's Alpha (Group 2)
Tobacco	0.90	0.85
Alcohol	0.91	0.70
Cannabis	0.91	0.85
Cocaine	0.93	0.74
Amphetamine	0.93	0.78
Inhalants	0.98	0.79
Sedatives/hypnotics	0.84	0.80
Hallucinogens	0.91	0.82
Opiates	0.97	0.83
Other	0.91	0.84

Meyer-Olkin (KMO) measure of sampling adequacy was higher than 0.60, and Bartlett's Test of Sphericity was significant (KMO>0.60, p<0.05).

The "Tobacco" subscale was evaluated in terms of consistency with the literature and was reduced to six items. The subscales of "Alcohol," "Marijuana," "Cocaine," "Amphetamine," "Inhalants," "Opioids," and "Other" were evaluated with seven items. Based on the factor loadings, all of these items loaded onto a single factor, and it was appropriate to calculate a total score for these items.

The "Sedatives and Hallucinogens" subscales were evaluated with seven items. Based on the factor loadings, items 2–4 were grouped as the first factor, and items 6 and 7 contributed to the second factor (Table 4).

Convergent and Divergent Validity of ASSIST: Correlations of ASSIST Scores with AUDIT, DUDIT, and FNDT Scales

ASSIST Tobacco scores were significantly correlated with FNDT scale scores (0.70 for Group 1 and 0.74 for Group 2). ASSIST Alcohol scores and total scores were significantly correlated with AUDIT and DUDIT scores, respectively (0.92 for Group 1 and 0.94 for Group 2; 0.91 for Group 1 and 0.90 for Group 2, respectively) (Table 5, 6).

Table 4: ASSIST validity factor analysis statistics

	Factor											
	Tobacco	Alcohol	Cannabis	Cocaine	Amphetamine	Inhalants	Sedatives		Hallucinogens		Opiates	Other
	1	1	1	1	1	1	1	2	1	2	1	1
Group 1 (n=209)												
Q 1	0.90	0.87	0.71	0.71	0.90	0.72	0.84		0.89		0.88	0.76
Q 2	0.89	0.94	0.81	0.80	0.84	0.97	0.78		0.96		0.83	0.94
Q 3	0.75	0.94	0.82	0.82	0.83	0.97	0.72		0.91		0.84	0.92
Q 3.4		0.85	0.73	0.73	0.82	0.70	0.77		0.95		0.87	0.93
Q 4	0.74	0.88	0.87	0.87	0.81			0.77		0.88	0.77	0.72
Q 5	0.76	0.84	0.83	0.73	0.86	0.97		0.79		0.91	0.70	0.79
KMO (Kaiser-Meyer-Olkin)	0.74	0.73	0.79	0.75	0.77	0.74	0.77	0.76	0.77	0.69		
Bartlett's Test p value	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001		
Group 2 (n=130)												
Q 1	0.92	0.88	0.91	0.94	0.91	0.92	0.88		0.99		0.91	0.94
Q 2	0.92	0.88	0.84	0.94	0.94	0.97	0.87		0.96		0.96	0.81
Q 3	0.74	0.87	0.86	0.92	0.83	0.97	0.80		0.93		0.97	0.93
Q 3.4		0.7	0.7	0.72	0.92	0.98	0.70		0.95		0.92	0.82
Q 4	0.87	0.81	0.89	0.90	0.81			0.84		0.86	0.91	0.86
Q 5	0.80	0.86	0.84	0.83	0.86	0.97		0.93		0.92	0.94	0.81
KMO (Kaiser-Meyer-Olkin)	0.83	0.87	0.83	0.89	0.85	0.90	0.77	0.85	0.90	0.81		
Bartlett's Test p value	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001		

ASSIST: Alcohol, Smoking, and Substance Involvement Screening Test; Q 1: How often have you used the substance(s) in the last 3 months?; Q 2; How often have you felt a strong desire or urge to use it in the last 3 months?; Q 3: How often has the substance use caused health, social or financial problems in the last 3 months?; Q 3.4: Have you failed to do what you would normally be expected to do because of your use in the last 3 months?; Q 4: Have any of your relatives ever expressed concern about your use?; Q 5: Have you ever tried to cut down or stopped using and failed?

Table 5: DUDIT-AUDIT-FNBT risk levels

	Low risk	Moderate risk	High risk
Group 1 (n=209)			
FNDT	133 (63.6)	37 (17.7)	39 (18.7)
	Risk -	Risk +	
DUDIT	188 (90)	21(10)	
AUDIT	170 (81.3)	39 (18.7)	
Group 2 (n=130)			
FNDT	46 (35.3)	30 (23)	54 (41.5)
	Risk -	Risk +	
DUDIT	55 (42.3)	75 (57.7)	
AUDIT	46 (35.4)	84 (64.6)	

FNDT: Fagerstrom Nicotine Dependence Test; DUDIT; Drug Use Disorder Identification Test; AUDIT; Alcohol Use Disorder Identification Test.

Table 6: Concordance correlation between ASSIST and FNDT/AUDIT/DUDIT scales

		Intraclass correlation (Group 1)	Intraclass correlation (Group 2)
ASSIST-tobacco	FNDT	**0.70**	**0.74**
ASSIST-alcohol	AUDIT	**0.92**	**0.94**
ASSIST-substance	DUDIT	**0.91**	**0.90**

Concordance correlation between ASSIST-Tobacco and FNDT was significant. Concordance correlation between ASSIST-Alcohol and AUDIT was perfect. Concordance correlation between ASSIST-Substance and DUDIT was perfect. ASSIST: Alcohol, Smoking, and Substance Involvement Screening Test; FNDT: Fagerstrom Nicotine Dependence Test; DUDIT: Drug Use Disorder Identification Test; AUDIT: Alcohol Use Disorder Identification Test.

DISCUSSION

The research was carried out to measure the validity and reliability of the scale in Turkish by following the translation instructions specified by the WHO (21). Conceptual, material, semantic, and operational equivalence were taken into account during the translation process (22). The scale was carefully revised, considering semantic inconsistencies and local adaptation, through forward and backward translation procedures. It was translated into Turkish using terms equivalent to the original English wording, such as "Alkol" for alcoholic beverages in the Alcohol category, "Esrar" for Cannabis in the Substance categories, "Kokain" for Cocaine, "İnhalanlar" for Inhalants, "Amfetaminler" for amphetamine-type stimulants, "Halüsinojenler" for Hallucinogens, and "Opioid" for Opioids. However, to represent certain items under the "Other" category, street terms such as "bonzai" were also included.

Interviews with the participants showed that the questions were not difficult to answer and were consistent with their expectations for a health interview. More importantly, there was no confusion regarding the flow, format, or structure of the interview. The scale is concise and easy to administer and interpret for clinicians, patients, and researchers. Unlike other substance abuse screening tests, ASSIST was designed to provide lifetime estimates of substance-related risk as well as current status.

In our study, the reliability scores of ASSIST for all items showed Cronbach's alpha values ranging between 0.70 and 0.98. Values above 0.75 are generally accepted as indicators of good reliability (23). The reliability values observed in our study were similar to those reported in previous ASSIST reliability studies conducted in different countries (24, 25).

In our study, the ASSIST Tobacco, Alcohol, Marijuana, Cocaine, Amphetamine, Inhalants, Opioids, Tranquilizers, Hallucinogens, and Other Substances subscales were evaluated using seven items. When factor structure analysis was conducted for all of these items, the dataset was found to be suitable for analysis (KMO>0.60, $p<0.05$). The "Tobacco," "Alcohol," "Marijuana," "Cocaine," "Amphetamine," "Inhalants," "Opioids," and "Other" items loaded onto a single factor. Therefore, it would be appropriate to calculate a total score for these subscales. However, the "Sedatives and Hallucinogens" items loaded onto two distinct factors. Items 2–4 loaded onto the first factor, while items 6 and 7 loaded onto the second factor. Thus, it would be more appropriate to calculate separate total scores for these two factors rather than a single total score for the "Sedatives and Hallucinogens" subscale.

In our study, intraclass correlation analysis was performed between ASSIST (Tobacco/Alcohol/Substance) and the FNDT, AUDIT, and DUDIT scales. The intraclass correlation coefficients ranged between 0.70 and 0.92, and the correlations were found to be significant.

Differences in ASSIST scores between groups (low and moderate-high risk) play an important role as indicators of the construct validity of the ASSIST scale and its ability to discriminate between samples with substance use. Preventive intervention programs aim to target at-risk populations at early stages to minimize the risk of progression to substance use disorder. Therefore, it is important to provide healthcare professionals with functional screening tools that are easy to implement for alcohol, tobacco, and other substances in a variety of clinical settings. Screening tools such as ASSIST provide opportunities to identify

and engage individuals in need of treatment and can be useful for increasing motivation, promoting behavior change, and reducing health care costs (26–28). In a study conducted with adults, the Voice Computer Assisted Self-Interview System (VCASIS) and traditional interview methods were compared, and high consistency was observed between the two methods in identifying medium-high risk individuals (29). Kane et al. (30) used a VCASIS-based ASSIST and reported high agreement between toxicology reports and cannabis and cigarette use as described in ASSIST. Combining screening and brief intervention is the most effective method for reducing problematic alcohol use among individuals at risk (31, 32), and also for other high-risk substance users (33).

This study has some limitations. Our study had a small sample size, which might limit the power of the results. Although the original version of ASSIST was recommended for use as a screening tool in primary care, the sample in our study consisted of individuals who applied to a psychiatry outpatient clinic; therefore, the results cannot be fully generalized to general health care settings. In our country, a Turkish validity and reliability study of this scale was previously conducted with individuals on parole or probation, and it was shown to be a valid measurement tool in this population (15). However, the very small number of inhalant, hallucinogen, and sedative users was an important limitation of that study. The lack of confirmatory factor analysis might also be considered a strong limitation, although the scale was found to be valid in our study. As the comparator scales (FNDT and AUDIT) have demonstrated relatively low internal consistency in previous Turkish studies, this may have indirectly affected the reliability results observed in the present study. Nevertheless, the consistency of our findings with validity results reported in previous studies may be considered evidence to the contrary. In addition, statement bias due to judicial reasons may have complicated the reliability of the results. In our study, validity and reliability data were collected from populations at different risk levels.

One of the strengths of our study was that participants who voluntarily applied for psychiatric care may have contributed to obtaining more valid responses. At the same time, it was important that the participants in the study had a balanced gender distribution. It is well known that concomitant alcohol and substance use is common among individuals who apply to psychiatry clinics. In a study conducted in our country, nicotine use disorder (57.4%), alcohol abuse and addiction (21.9%), and sedative/hallucinogen use disorder (9%) were reported among patients in an inpatient clinic (34). These data are consistent with the findings of our study.

Our results suggest that the Turkish version of ASSIST can be used as part of a general public health approach in settings such as counseling centers and general psychiatry services to screen for cigarette, alcohol, and substance use. The findings of this study indicate that the Turkish version of ASSIST is a valid and reliable screening tool for alcohol and substance use in the adult psychiatric population. These results are similar to previous studies conducted in other languages and populations, which demonstrated the validity of ASSIST as a screening tool for alcohol, tobacco products, and substance use (35–41).

CONCLUSION

In conclusion, ASSIST v3.1 can be applied as a screening tool for cigarette-, alcohol-, and substance-related problems in general psychiatry and psychiatric counseling centers in our country. Future studies conducted in different populations would provide further evidence regarding the effectiveness of ASSIST and contribute to both the literature and daily clinical practice.

Ethical Approval: The Erenkoy Training and Research Hospital for Psychiatry and Neurological Diseases Ethics Committee granted approval for this study (date: 08.10.2019, number: 55).

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