

## Validity of severity of dependence scale-Indonesia in patients with drug and alcohol dependence

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### ABSTRACT

A quick and self-administrative screening tool to detect dependence on various substances is vital in the early detection of multiple substance dependence. This study aimed to validate the severity of the dependence scale Indonesian version (SDS-Ina) in a sample of clinically diagnosed substance-related disorder subjects. The study was an observational study and rapid assessment of suspected patients with drug and alcohol dependence in an outpatient psychiatric unit in Yogyakarta, Indonesia. The translated severity of dependence scale-Indonesia (SDS-Ina) questionnaire was given out to 65 subjects through an online form. The content validity of the translated SDS was assessed with Aiken's V, and concurrent validity was analyzed in comparison to the Diagnostic of Statistical and Manual Mental Disorder IV (DSM-IV) diagnosis criteria with Pearson correlation coefficient and factor validity through principal component analysis (PCA). Reliability was assessed using Cronbach's Alpha and test-retest reliability. Aiken's V index concluded that our content validity was valid ( $\text{all} > 0.75$ ). A Pearson correlation coefficient of  $=0.93$  ( $P < 0.001$ ), PCA of all items  $\geq 0.60$  further validates the SDS-Ina. Internal reliability of Cronbach's Alpha  $0.907$  and test-retest reliability (intraclass correlation coefficient (ICC):  $\text{all} \geq 0.75$ ). In conclusion, the translated SDS is a valid and reliable tool to measure the psychological dependence of Indonesian subjects involved in this study.

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## 1. INTRODUCTION

In a triage setting, medical personnel have confronted a growing number of emergency room patients who are under the influence of illicit drugs [1]. About 0.73% of all traffic incidents in 2019 were alcohol-related, in 2020 0.71% were alcohol-related [2], [3]. Abuse of narcotics such as heroin, methamphetamine, marijuana, and alcohol has reached epidemic proportions in many countries including in Asia [4]. In Indonesia, a cultural taboo exists that severely limits the open recognition of drug-related problems associated with drug addiction and chemical dependency [5]. A simple and short evaluation is needed for the rapid assessment of people suspected of drug and alcohol dependence.

Addiction or substance use disorder as defined in the Diagnostic and Statistical Manual of Mental Disorders 5<sup>th</sup> Edition (DSM-V) is when recurrent substance use leads to significant impairment [6]. Eleven criteria are classified into four main groups; physical dependence, social problems, risky use, and impaired control constitute the main complaints of addiction. As of now, 10 classes of substances are recognized by

the DSM-V of which alcohol, opioids, cannabis, and anxiolytic medications are included. The word 'addiction' is not applied as a diagnostic term in this classification, with 'substance use disorder' being a more neutral term used to describe the disorder's wide range, from a mild form to a severe state of chronically relapsing, compulsive drug taking [6].

The use of substances is on the rise in adolescence, especially in males, contributing to the rising risk of developing long-term mental disturbance, academic or work-related dysfunction, or consequently developing addiction [7]. Initiation of usage before 18 years old is more likely to become an addiction [8]. Some researchers have suggested that the COVID-19 pandemic has led to an increase in illicit drug use, as more people are anxious while drug addicts might have trouble acquiring the drugs due to isolation and social distancing regulations and hence turn to other psychoactive substances such as benzodiazepine [9]-[11].

According to the research, data, and information center, National Narcotics Board of The Republic of Indonesia, the prevalence of narcotics use in the year 2021 is 1.95%, an increase from 1.80% in 2019 especially in those between 15-24 and 50-64 years of age and a total of 43,320 are currently rehabilitated [12]. As of the year 2021, the most widely abused substance in Indonesia is methamphetamine, also known as *sabu*, followed by marijuana [12]. In Indonesia, the death penalty is enforced upon those involved in the distribution of 1 kilogram or more of narcotic plants or 5 grams of its processed form [13]. In 2021, 82% of the total death penalty cases in Indonesia were narcotics-related [14]. Screening or early detection of narcotics usage is done by random urine testing which has successfully detected 1,022 positive cases in 2021 [12].

Another screening tool widely used throughout the nation is the addiction severity index (ASI). It was first developed in 1980 to be used in the Philadelphia V.A. Medical Center as a guide for assessment interviews to gather information related to substance abuse. It comprises 200 questions divided into 7 subscales (medical status, employment and support, drug use, alcohol use, legal status, family and social status, and psychiatric status) [15]. It is translated into 9 languages and is significantly used in cocaine, alcohol, and opiate addiction. However, the downfall of such a tool is in the complexity of usage, it is not reliable nor valid in being a self-administered questionnaire, is to be filled by examiners paraphrasing respondents' answers, and requires a long duration to complete [15].

A brief self-reporting tool that is used globally is the severity of dependence scale (SDS). The instrument severity of dependence scale was developed by Dr. Michael Gossop in 1995 as a 1 minute and easily accessible scale to measure the degree of dependence experienced by various substance users [16]. It includes 5 questions; each relating to a different psychological component of dependence and is answered using a Likert scale from 0 being 'never' to a maximum of 3 being 'always'. SDS is initially tested on 1312 subjects using cocaine, heroin, methadone, or amphetamine; the questionnaire inquires on the frequency and duration of use and yields a Cronbach's  $\alpha$ -value of 0.81-0.90. As of now, the SDS is translated into Portuguese, Japanese, and Chinese [17]-[19].

A quick and self-administrative screening tool to detect dependence on various substances is vital in the early detection of multiple substance dependence. As substance dependence continues to pose a public health threat in the Republic of Indonesia, the development of a validated Indonesian version of the SDS is important. This study aimed to assess the validity and reliability of the translated SDS among Indonesian drug-dependence samples.

## 2. METHODS

This was an observational descriptive study and rapid assessment of suspected patients with drug and alcohol dependence. Participants of this study were 64 clinically diagnosed substance-related disorder (marijuana) patients going through treatment at the psychiatric outpatient clinic in Yogyakarta with a history of drug use for a minimum of 12 months. Study subjects were recruited with convenient sampling. The ages of participants ranged from 21-42 years old and the main substance used was marijuana, 62.5% also consumed alcohol and 21.88% were on benzodiazepines. Data were collected through the distribution of online forms and the Diagnostic Statistical and Manual of Mental Disorder IV (DSM-IV) diagnosis criteria of patients. Participants were briefed to fill out the form according to their last 1-month experience. Exclusion criteria include illiterate participants, incomplete questionnaires, and diagnosed with other psychiatric disturbances such as schizophrenia, mental retardation, other cognitive disturbance, or physical disability. Participants were asked to fill out the form again after 7 days. Informed consent was obtained from participants. EC number was KE/0314/02/2023 from the ethical committee faculty of medicine, public health, and nursing, Universitas Gadjah Mada, Indonesia.

The instrument used in this study is the SDS. Permission to translate the scale is obtained from Dr. Gossop through a confirmation email. This is a self-reported instrument that includes 5 questions. The maximal score of this instrument is 14. This instrument is translated into Indonesian through the following steps: initial forward translation, forming an expert committee, backward translation, preliminary pilot study, reliability and validity testing, and finally discussion of results with the formed expert committee [20].

In this study, validation was analyzed with i) content validity coefficient using Aiken's V to investigate whether the questionnaire's items are relevant to the goal. This is scored from 1-5 according to relevancy by the recruited expert panel [21], ii) factor validity testing with principal component analysis, and iii) concurrent validity with Pearson correlation coefficient between the total SDS score and the total value of DSM-IV criteria met. Internal consistency was tested with Cronbach's Alpha and test-retest reliability.

### 3. RESULTS AND DISCUSSION

#### 3.1. Results

##### 3.1.1. Participants characteristics

Participants' demographic data is represented in Table 1. The majority were male (95%), the average age of participants was 29.5 (SD=5.5) and 84.94% were employed. Substances use reported by participants were benzodiazepines (100%), alcohol (62.5%), and cannabis (15.6%). The duration of usage varies from 1-15 years with an average of 5.9 years (SD=3.18). Consent was given by the creator of the SDS. The scale is then translated into Bahasa Indonesia by a native Indonesian fluent in both English and Bahasa Indonesia and is backward translated by a native from the Language Clinic facility offered by Universitas Gadjah Mada. The translated scale seen in Table 2, is then consulted with a formed expert committee comprising six psychiatrists. A pilot study carried out with 64 DSM-V diagnoses of cannabis-related disorder participants is carried out with the following results.

Table 1. Demographic data

Characteristics	N	Percentage
Age (range)	21-42	(29.5*±5.5)
Gender		
Male	61	95.31%
Female	3	4.69%
Employment		
Employee	51	79.69%
Self-employed	4	6.25%
Unemployed	9	14.06%
Multiple substance		
Alcohol	40	62.50%
Benzodiazepine	14	21.88%

\*Mean (SD) average age

Table 2. Final SDS-Ina approved by the expert committee

Original (O)	Translation (T)
1. (O): Did you think your use of [named drug] was out of control? (Answer: 0: never/almost never, 1: sometimes, 2: often, 3: always/nearly always)	(T): <i>Pernahkah anda berpikir bahwa penggunaan obat Anda tidak dapat dikontrol? (Jawaban: 0: tidak pernah, 1: kadang-kadang, 2: sering, 3: selalu)</i>
2. (O): Did the prospect of missing a fix (or dose) or not chasing make you anxious or worried? (Answer: 0: never/almost never, 1: sometimes, 2: often, 3: always/nearly always)	(T): <i>Bila tidak dapat obat, apakah anda merasa cemas? (Jawaban: 0: tidak pernah, 1: kadang-kadang, 2: sering, 3: selalu)</i>
3. (O): Did you worry about your use of [named drug]? (Answer: 0: never/almost never, 1: sometimes, 2: often, 3: always/nearly always)	(T): <i>Apakah anda merasa khawatir dengan penggunaan obat-obatan ini? (Jawaban: 0: tidak pernah, 1: kadang-kadang, 2: sering, 3: selalu)</i>
4. (O): Did you wish you could stop? (Answer: 0: never/almost never, 1: sometimes, 2: often, 3: always/nearly always)	(T): <i>Apakah anda berharap anda dapat berhenti? (Jawaban: 0: tidak pernah, 1: kadang-kadang, 2: sering, 3: selalu)</i>
5. (O): How difficult did you find it to stop, or go without [named drug]? (Answer: 0: never/almost never, 1: sometimes, 2: often, 3: always/nearly always)	(T): <i>Seberapa sulit usaha anda untuk menghentikan pemakaian obat ini? (Jawaban: 0: tidak pernah, 1: kadang-kadang, 2: sering, 3: selalu)</i>

##### 3.1.2. Content validity

Content validity is measured using Aiken's V index for each item. An expert committee of 6 psychiatrists rates the SDS on a 5-point Likert scale regarding the relevancy of each item to the level of dependence. The result is represented in Table 3. A cut-off of 0.75 (CI=95%, P<0.05) is derived from Aiken's V table [21].

Table 3. Content validity based on Aiken`s validity

Items	Aiken`s V Index	Cut-off	Interpretation
Item 1	0,79	0,75	Valid
Item 2	0,89	0,75	Valid
Item 3	0,89	0,75	Valid
Item 4	0,82	0,75	Valid
Item 5	0,86	0,75	Valid

### 3.1.3. Factor validity

The PCA was performed on all 5 items of Indonesian SDS to determine the factor validity. Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy and Bartlett's test of sphericity yielded a value of 0.617 and 0.000 respectively, indicating that this sample was suitable for PCA (KMO>0.50, P<0.05). A two-factor solution was obtained, which accounted for 37.9% and 29.1% with a cumulative of 67.0% of the variances, see Table 4. The component matrix showed that all items loaded strongly on this two-factor solution (all  $\geq 0.60$ ), see Table 5.

Table 4. Principal component analysis of the Indonesian severity of dependence scale

Factor	Eigenvalue	% of variance explained	Cumulative %
1	1.89	37.9	37.9
2	1.46	29.1	67.0
3	0.58	11.6	78.6
4	0.55	11.0	89.6
5	0.52	10.4	100.0

Table 5. Factor loadings of the Indonesian severity of dependence scale items

Items	Factor loadings*
Item 1	0.81
Item 2	0.83
Item 3	0.82*
Item 4	0.83*
Item 5	0.61

Extraction method: principal component analysis; Rotation method: Varimax with Kaiser Normalization; \*Factor loadings shown are variables with the highest correlation to the second factor.

### 3.1.4. Concurrent validity and reliability

A Pearson's product-moment correlation yields a high correlation between the total SDS score and the total DSM-IV diagnostic criteria of dependence ( $r_s=0.93$ ,  $P<0.001$ ). Cronbach's coefficient alpha measures the internal consistency of the SDS resulting in a value of 0.907 indicating excellent reliability [22]. The test-retest yields excellent reliability for each of the 5 individual items (ICCs=0.83, 0.76, 0.84, 0.85, and 0.75, respectively).

## 3.2. Discussion

Our study concluded that the SDS Indonesian translation is valid and reliable in measuring the severity of dependence on alcohol, marijuana, and benzodiazepine users. Content validity as tested with Aiken's V falls within the range 0.79-0.89 indicating that all 5 items are valid (Aiken's  $V>0.75$ ,  $P<0.05$ ) [21]. The validity of the translated SDS is further supported by Pearson product-moment correlation of 0.93 ( $P<0.001$ ) between the total SDS score and the total DSM-IV criteria met. Such is the case in both the Chinese and Portuguese translated versions of the SDS [17], [19]. A two-tailed factor was obtained and all 5 items loaded strongly as represented enable 5 ( $\geq 0.60$ ). A Cronbach's alpha of 0.907 indicates good consistency in the measurement of the same construct of dependence as tested by the SDS. The intraclass correlation coefficient (ICC) value of 0.829 indicates excellent test-retest reliability ( $>0.75$ ) as per the individual items [20].

On the other side, COVID-19 pandemic has impacted every aspect of human life significantly. Applying new habits and limitations in social interaction during the pandemic, influences mental health, especially in young adults and adolescents. Stressful conditions in vulnerable individuals will encourage the use of addictive substances and alcohol [23], [24]. Several studies reported increased use of novel psychoactive and performance-enhancing drugs in young adults [25]-[27]. Feelings of anxiety and phobia of disease are thought to encourage someone to use stamina-enhancing and psychoactive substances [27]. The

emergence of novel psychoactive substances during the pandemic, for example, isotonitazene (analog of the benzimidazole class of analgesics), indicates that supervision of addictive substances must be further improved [26]. Apart from anxiety, the ease of access to buying illegal drugs online during a pandemic has also contributed to increasing the consumption of drugs and substances and increasing dependence on the substances used [28]. Drug dealers and users widely use social media to promote new drugs and discuss the purity of the active substances being sold, their dosages, to the price of drug products [29]-[31].

Validation of the SDS-Ina as a tool for measuring dependence on alcohol and illegal substances is the first step in improving screening to prevent long-term adverse effects of dependence on narcotics, alcohol, and addictive substances in the Indonesian population [31], [32]. Previous studies supported our claim in the validation of SDS-Ina to measure psychological dependence in alcohol, marijuana, and benzodiazepines [17], [33]-[35]. Cut-off points of specific substances are also established in regard to DSM-V dependence diagnosis, however further study is still required. The SDS-Ina is feasible as a self-reporting screening tool to measure the psychological dependence of substances, it is fairly easy and cost-effective to administer [16], [36]-[38]. Future studies should broaden the scope of the detection of illegal substances and addictive substances so that the effectiveness of SDS-Ina in screening suspected drug addiction patients in Indonesia will be better.

#### 4. CONCLUSION

Our result yields a satisfactory measure of the validation and reliability of the SDS-Ina. To imply and generalize the usage of this questionnaire needs further and larger research because this research only piloted the Indonesian version of SDS on a small population in a single-centered study.




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