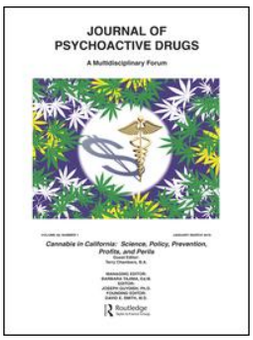

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Psychometric Properties of the Turkish Versions of the Cannabis Use Problems Identification Test (CUPIT) and the Adult Cannabis Problems Questionnaire (CPQ)

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ABSTRACT

Cannabis and synthetic cannabinoids are widely used illicit substances in Turkey. The Cannabis Use Problems Identification Test (CUPIT) is a brief self-report screening instrument for detection of problematic cannabis use, whereas the Cannabis Problems Questionnaire (CPQ) is a measure for cannabis treatment outcome. The aim of this study was to evaluate the psychometric properties of the CUPIT and CPQ among Turkish male outpatients with cannabis (n = 52) and synthetic cannabinoid (n = 45) use disorder. Participants were evaluated with the CUPIT, the CPQ, and the Cannabis Withdrawal Scale (CWS). Principal Component Analysis (PCA) supported two-factor construct validity for CUPIT. Cronbach's alpha was 0.84 for CUPIT-A factor, 0.83 for CUPIT-B factor, and 0.89 for CUPIT, when considered as a unidimensional scale. Cronbach's alpha was 0.82 for CPQ-A factor, 0.73 for CPQ-B factor, 0.30 for CPQ-C, and 0.87 for CPQ, when considered as a unidimensional scale. The CUPIT and the CPQ were moderately correlated with the CWS (r = 0.63 and r = 0.74, respectively), whereas the CUPIT and the CPQ were strongly correlated with each other (r = 0.76). The Turkish version of the CUPIT and the CPQ can effectively identify substance use problems and treatment outcome, respectively, among outpatients with cannabis or synthetic cannabinoid use disorder.

KEYWORDS

Cannabis; CPQ; CUPIT; psychometric properties; synthetic cannabinoid

Cannabis is the most commonly used illicit drug and cannabis use disorder (CUD) is a widespread public health problem (Bashford, Flett, and Copeland 2010; CBHSQ 2015). Although the prevalence of cannabis use among the general population has steadied in many countries after several years of increase, demands for treatment continue to rise, indicating an increase in cannabis-related problems (EMCDDA 2012). The increase in tetrahydrocannabinol (THC) levels in cannabis in recent years (NIDA 2016) and new trends like consuming edibles and dabbing may lead to consumption of higher THC doses by cannabis users, which is associated with higher harmful effects, increased need for emergency room visits, and greater risk of addiction (Mehmedic et al. 2010). While CUD continues to be a major public health problem, use of synthetic cannabinoids, also called the heroin of cannabis, has grown in recent years (Bilgrei 2016) and synthetic cannabinoids have become the most prevalent new psychoactive substances on the market (EMCDDA 2015). Although synthetic cannabinoids share some structural or functional similarities to THC, they are associated with higher rates of toxicity and hospital admissions than natural cannabis (Mills, Yepes, and Nugent 2015).

CUD has been associated with important health risks, including impaired cognitive function, learning and memory, increased risk of vehicle crashes, bronchitis, psychosis, paranoia, and other substance use disorders (Brady and Li 2014; Chen, Storr, and Anthony 2009; Mehmedic et al. 2010; Meier et al. 2012). Beyond negative effects on mental and physical health, CUD is also associated with low life satisfaction, more relationship problems, low academic success, more job absences, accidents, and injuries (McCaffrey et al. 2010; Mehmedic et al. 2010). Individuals with CUD also report negative social, occupational, and legal problems (Copeland et al. 2005). Despite these negative consequences, the proportion of cannabis

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users who believe cannabis use is risky is decreasing (Johnston et al. 2015), and most of the users with cannabis-related problems neither access nor seek specialist treatment (Hall and Swift 2006). This may lead to a treatment gap in CUD similar to other substance use disorders.

Screening for risky use and planning targeted interventions at earlier stages where prognosis is more favorable can impact cannabis-related mortality and morbidity (Beck and Legleye 2008; Turner, Spithoff, and Kahan 2014). Screening for CUD is especially important in primary health care, where high CUD rates are present (Beck and Legleye 2008; Turner, Spithoff, and Kahan 2014). Although screening of CUD and assessment of cannabis-related harm have a value, beliefs that cannabis is a benign and non-addictive substance may lead to a delay in development of appropriate screening tools for CUD (Dennis et al. 2002; Stephens and Roffman 2005). Fortunately, several scales show promise for standardized assessment of CUD while providing a wide network for helping professionals to participate in cannabis assessment and intervention. These scales include the Cannabis Use Problems Identification Test (CUPIT) (Bashford, Flett, and Copeland 2010), Cannabis Problems Questionnaire (CPQ) (McCaffrey et al. 2010), Cannabis Abuse Syndrome Screening Test (CASST) (Hannifin 1990), Marijuana Screening Inventory (MSI-X) (Alexander and Leung 2004, 2006), Cannabis Abuse Screening Test (CAST) (Legleye et al. 2007), Cannabis Use Disorders Identification Test (CUDIT) (Adamson and Sellman 2003), and Problematic Marijuana Use test (PUM) (Okulicz-Kozaryn 2007).

When assessing a patient with potential cannabis use, a valid screening to detect patients at risk of CUD is needed, and the CUPIT can identify both problematic and risky use across diverse community settings and consumers (Bashford, Flett, and Copeland 2010). Secondly, detection of problems related to CUD is needed in order to initiate an effective treatment plan and assess treatment outcome. The CPQ is a global measure of cannabis-related problems, including hazardous use, interpersonal problems, psychological and motivational concerns, physical health, finances, and neglect of other activities, and may be helpful in this second step (Copeland et al. 2005).

Although scales may provide a time-aving and cost-effective method in clinical practice (Piontek, Kraus, and Klempova 2008), there is no specific instrument in Turkish to measure CUD or related problems. To our knowledge, there is no scale for the evaluation of synthetic cannabinoid use disorder or related problems in any language. Thus, in this article, we present psychometric analyses of internal consistency reliability, factor structure, and concurrent validity for the CUPIT and CPQ, based on a sample of Turkish male outpatients with cannabis or synthetic cannabinoid use disorder.

Methods

Participants

The data were gathered from an Outpatient Treatment Center in the Alcohol and Drug Research Training and Treatment Center (AMATEM), Bakirkoy Training and Research Hospital for Psychiatry, Neurology and Neurosurgery, Istanbul. Outpatients with cannabis (n = 52) and synthetic cannabinoid (n = 45) use disorder were included. There were no exclusion criteria, since these criteria were applied during the treatment (e.g., outpatients with severe psychopathology and/or cognitive deficiency were treated elsewhere). The patient's written informed consent was obtained after the study protocol was thoroughly explained. Two patients were excluded due to illiteracy, 11 patients declined to participate, and four patients were excluded due to incomplete data.

Translation

Two experts in psychiatry independently translated the original CUPIT and CPQ from English into Turkish. These experts reached consensus on a common draft. This Turkish version was translated back into English by an independent translator.

Assessments

The participants were evaluated with the CUPIT, CPQ, and the Cannabis Withdrawal Scale (CWS).

The cannabis use problems identification test (CUPIT)

The 16-item CUPIT is a brief cannabis screener that is reliable, valid, and acceptable for use across diverse community settings and consumers of all ages with a good to excellent test–retest (0.89–0.99) and internal consistency reliability (0.92, 0.83), and shown to discriminate diagnostic subgroups along the severity continuum (non-problematic, risky, problematic use) (Bashford, Flett, and Copeland 2010). It screens for cannabis use in past 12 months, cannabis use in past three months, cannabis-induced problems, and risk of harm and dependence (Bashford, Flett, and Copeland 2010).

The cannabis problems questionnaire (CPQ)

The CPQ measures cannabis-related problems, including hazardous use, interpersonal problems, psychological and motivational concerns, physical health, finances, and neglect of other activities (Copeland et al. 2005). It was based on work in the alcohol field distinguishing between alcohol dependence and alcohol-related problems, and was modeled on the Alcohol Problems Questionnaire (APQ) (Drummond 1990; Williams and Drummond 1994). The scale has a dichotomous "yes/no" response format. The CPQ appears to be a valid, reliable, and sensitive measure of cannabis-related problems with high one-week test-retest (0.92–1.00) and interrater (0.74–1.00) reliability (Copeland et al. 2005).

The cannabis withdrawal scale (CWS)

The CWS is a 19-item scale that can be used as a diagnostic instrument in clinical settings to monitor cannabis withdrawal symptoms. Participants rate each statement related to symptoms by giving points from 0 to 10 (0 = Not at all to 10 = Extremely) and, additionally, rate each statement's negative impact on their daily activity. Two scores can be derived from the scale: one for withdrawal intensity and one for the negative impact of withdrawal. It is reported that, with an internal reliability (Cronbach's alpha = 0.91) and test-retest stability (average intra-class correlation = 0.95), CWS has excellent psychometric properties (Allsop et al. 2011). Cronbach's Alpha was found as 0.93 in the present study.

Data analysis

The statistical package Predictive Analytics SoftWare (PASW) 18.0 for Windows was used for all analyses. The following strategies were used to investigate the psychometric properties of the CUPIT and CPQ: (1) convergent validity was evaluated by calculating a Pearson product–moment correlation between the CUPIT, the CPQ, and the CWS; (2) internal consistency reliability was assessed using Cronbach's alpha; (3) factor structure of the CUPIT and CPQ were examined using a Principal Component Analysis (PCA), which was also used by the studies of the original scales.

Results

Table 1 presents sociodemographic characteristics of the study group.

Table 1. Sociodemographic characteristics.

	n	%
Age (Mean ± SD)	27.88	6.25
Education		
Elementary school	25	25.8
Secondary school	38	39.2
High school	19	19.6
University	15	15.4
Marital status		
Married	35	36.1
Single	55	56.7
Divorced/separated	7	7.2
Employment	45	22.9
Unemployed	31	32.0
Employed	61	61.9
Part-time employed	6	6.1

Factorial structure

To explore the factor structure of the CUPIT and CPQ, PCA was performed using all participants (n = 97); for the rotation method, Promax with Kaiser normalization was used. Criteria for retaining extracted components on the PCA were: (1) visual inspection of the scree plot to note breaks in size of Eigenvalues between the components; (2) eigenvalues greater than one; and (3) percentage of variance accounted for by components retained.

CUPIT

To measure sampling adequacy, we used Kaiser-Meyer-Olkin (KMO), which was good (0.83); to test sphericity, we used Bartlett's Test, which was significant ($p < 0.001$).

The PCA of the CUPIT's 16 items resulted in a four-factor solution, which accounted for 67.1% of the total variance. Four components on the CUPIT reached the criterion of an eigenvalue greater than one (6.69, 1.66, 1.34, and 1.03, respectively) and the distribution of explained variance was 41.8, 10.4, 8.4, and 6.5%, respectively. Since visual inspection of the scree plot revealed two components accounting for the majority of variance and the original study found two factors, we derived a two-factor solution for the scale. Together, the two factors used in this analysis explained 52.2% of the variance (not shown). As seen in Table 2, all item-component loadings were higher than 0.30 and were in the "fair" (0.38) to "excellent" (0.87) range.

CPQ

Three items were deleted from the CPQ because they had low corrected item-total correlation (Item-2 = 0.12, Item-7 = 0.10, and Item-10 = 0.22). To measure sampling adequacy, we used Kaiser-Meyer-Olkin (KMO),

Table 2. Items belonging to the factors of the Cannabis Use Problems Identification Test (CUPIT), its factor loadings, item-subdimension, and corrected item-total correlation.

	Component		Correlations	
Items	A Impaired control	B Problems	Item-Subdimension	Item-CUPIT
1-On how many days have you used cannabis during the past 12 months?	0.852		0.761	0.693
2-Now please think about your recent cannabis use. On how many days have you used cannabis over the past 3 months (90 days)?	0.848		0.749	0.671
10-Have you found it difficult to get through a day without using cannabis?	0.770		0.745	0.727
8-Have you felt that you needed cannabis?	0.737		0.717	0.711
7-What was the longest time you went without using cannabis?	0.696		0.746	0.692
3-How many times would you use cannabis on a typical day when you were using?	0.627		0.687	0.674
6-How difficult do you think you would find it to stop using or go without cannabis altogether?	0.621		0.585	0.614
4-How often have you used cannabis first thing in the morning?	0.599		0.695	0.689
9-Have you been able to stop using cannabis when you wanted to?	0.495		0.548	0.525
5-How much of the average day do you spend/or feel stoned?	0.313		0.448	0.449
14-Has anything you had planned, or were expected to do, not happened after using cannabis?		0.817	0.772	0.598
15-Have you had problems concentrating and remembering things?		0.809	0.800	0.636
12-Have you lacked the energy to get things done in the way you used to?		0.799	0.811	0.689
11-Did your use of cannabis ever interfere with (get in the way of) your work at school, your job, or your home life?		0.784	0.761	0.584
13-Have you given up things you used to enjoy or were important because of cannabis?		0.744	0.764	0.769
16-Did you ever use cannabis after you had decided not to?		0.460	0.575	0.452
Eigenvalues	6.692	1.663		
% of variance	41.825	10.391		
Cronbach's Alpha	0.844	0.827	0.887	

Extraction Method: Principal Component Analysis. Rotation Method: Promax with Kaiser Normalization. Cronbach's alpha is 0.835 for the cannabinoid use disorder group and 0.859 for the synthetic cannabinoid use disorder group.

which was good (0.79), and to test sphericity we used Bartlett's Test, which was significant ($p < 0.001$).

The PCA of the CPQ's 18 items out of 21 items resulted in a five-factor solution, which accounted for 58.6% of the total variance. Five components on the CPQ reached the criterion of an eigenvalue greater than one (5.57, 1.47, 1.35, 1.11, and 1.05, respectively) and the distribution of explained variance was 30.9, 8.2, 7.5, 6.1, and 5.8%, respectively. Although visual inspection of the scree plot revealed two components accounting for the majority of variance, the two factors used in this analysis explained 39.1% of the variance, which was below 40.0% (not shown). Also, a three-factor solution was suggested both in the original study for the scale (Copeland et al. 2005) and in the Adolescent CPQ (CPQ-Ad) (Martin et al. 2006). Thus, we derived a three-factor solution for the CPQ, which explained 46.6% of the variance. As seen in Table 3, all item-component loadings were higher than 0.30 and were in the "fair" (0.40) to "good" (0.65) range.

Table 3. Items belonging to the factors of the Cannabis Problems Questionnaire (CPQ), its factor loadings, item-subdimension, and corrected item-total correlation.

	Component			Correlations	
Items	A	B	C	Item-Subdimension	Item-CPQ
17- Has your general health been poorer than usual?	0.723			0.696	0.635
13- Have you felt depressed for more than a week?	0.705			0.685	0.614
18- Have you felt more antisocial after smoking?	0.684			0.695	0.614
15- Have you given up recreational activities you once enjoyed for smoking?	0.639			0.676	0.676
21- Do you usually have a smoke in the morning, to get yourself going?	0.621			0.657	0.641
20- Have you worried about feelings of personal isolation or detachment?	0.615			0.631	0.577
8- Have you been physically sick after smoking?	0.582			0.602	0.552
14- Have you been so depressed you felt like doing away with yourself?	0.550			0.526	0.455
19- Have you been concerned about a lack of motivation?	0.518			0.556	0.492
9- Have you passed out after a smoking session?		0.790		0.736	0.567
6- Do you find yourself making excuses about money?		0.789		0.770	0.599
5- Have you sold any of your belongings to buy cannabis?		0.629		0.618	0.431
12- Have you failed to wash for several days at a time?		0.572		0.538	0.428
16- Do you find it hard to get the same enjoyment from your usual interests?		0.531		0.644	0.630
4- Have your friends criticized you for smoking too much?		0.439		0.580	0.500
3- Have you spent more time with smoking friends than other kinds of friends?			0.888	0.782	0.466
1- Have you tended to smoke more on your own than you used to?			0.603	0.756	0.456
11- Have you been neglecting yourself physically?			0.591	0.708	0.565
Eigenvalues	5.569	1.471	1.353		
% of Variance	30.938	8.174	7.516		
Cronbach's Alpha	0.817	0.729	0.297	0.865	

Extraction Method: Principal Component Analysis. Rotation Method: Promax with Kaiser Normalization. Cronbach's alpha is 0.855 for the cannabinoid use disorder group and is 0.782 for the synthetic cannabinoid use disorder group.

Convergent validity and internal consistency reliability

Corrected item total correlations for CUPIT-A, CUPIT-B, and CUPIT in the total sample are shown in Table 2. Internal consistency reliability for the CUPIT, examined by Cronbach's alpha, was also very high (coefficient alpha was 0.84 for CUPIT-A, 0.83 for CUPIT-B, and 0.89 for CUPIT) (Table 2). Corrected item total correlations for CPQ-A, CPQ-B, CPQ-C, and CPQ in the total sample are shown in Table 3. Internal consistency reliability for the CPQ was also high (coefficient alpha was 0.82 for CPQ-A, 0.73 for CPQ-B, 0.30 for CPQ-C, and 0.87 for CPQ) (Table 3). The Pearson product–moment correlations of the CUPIT and the CPQ were moderate with the CWS (r = 0.63 and r = 0.74, respectively), whereas the CUPIT and the CPQ were strongly correlated with each other (r = 0.76) (Table 4).

Discussion

In the present study, the CUPIT and the CPQ were generally found to have satisfactory psychometric characteristics among Turkish male outpatients with cannabis or synthetic cannabinoid use disorder.

In the development study of CUPIT, high-risk adolescents (n = 138) and adults (n = 74) aged 13–61 years from multiple community settings were included. In that study, which was conducted by Bashford, Flett, and Copeland (2010), 16 items loading on two primary components ("impaired control" and "problems") after rotation explained 38.62% of the total variance. While most items loaded above that deemed "excellent" (>0.71) or "very good" (>0.63), all loaded well above the minimum for interpretive purposes (0.30) (Comrey and Lee 1992; Nunnally 1978). The first component had significant loadings of 10 items: five were consumption variables, with the remaining five suggesting "impaired control" over use. The second component comprised six items reflecting consequences of, or "problems" caused by, cannabis use. Similar components were found in the present study, with the exception of the fifth item (*How much of the average day do you spend/or feel stoned?*), which had higher loading for the problems component (0.427) than the impaired control component (0.312). However, since loading for the impaired control component was higher than 0.30, we decided to keep the fifth item in this factor as the original scale. These two components explained 52.22% of the total variance, which was higher than the original study (Bashford, Flett, and Copeland 2010). Also, most items loaded above that deemed "excellent" (> 0.70) or "very good" (> 0.60); all loaded well above the minimum for interpretive purposes (0.30). Item subscale correlations ranged between 0.45 and 0.81. In the Bashford, Flett, and Copeland (2010) study, these two components had Cronbach's alpha coefficients of 0.92 and 0.83, respectively (0.92 and 0.79 for adolescents and 0.92 and 0.90 for adults). In the present study, Cronbach's alpha coefficient for the "impaired control" factor was 0.84; for the "problems" factor, it was 0.83. Convergent validity was evaluated by calculating a Pearson product–moment correlation between the CUPIT, the CPQ, and the CWS. CUPIT-A, CUPIT-B, and CUPIT were moderately correlated with CPQ (r = 0.68, r = 0.72, and r = 0.76, respectively) and CWS (r = 0.57, r = 0.58, and r = 0.63, respectively).

The development study of CPQ (Copeland et al. 2005) was administered on two occasions one week apart to a stratified sample of adults (n = 100) who had used cannabis at least once in the previous three months. In that study, which was conducted by Copeland et al. (2005), PCA revealed that a three-factor solution best described the data, accounting for 57% of the variance in the larger item set. These three factors were described as focusing on acute and physical consequences, psychological consequences, and social consequences of cannabis use. In the present study, the internal consistency of the CPQ was measured using the equivalent of Cronbach's alpha for dichotomous variables, the Kuder–Richardson Formula 20, which demonstrated coefficient alpha scores of 0.78, 0.71, and 0.55 for the factors 1–3, respectively. Similarly, in the CPQ-Ad, three factors were identified in the analysis, which were described as financial/psychosocial consequences, physical consequences, and acute negative consequences of cannabis use (Cronbach's alphas 0.88, 0.72, and 0.73, respectively) (Martin et al. 2006). Thus, we derived a three-factor solution for the CPQ, as in the previous studies conducted among adults (Copeland et al. 2005) and adolescents (Martin et al. 2006), which explained 46.6% of the variance in the present study. These three factors identified in the

Table 4. Correlations between the scale scores.

	CUPIT-A	CUPIT-B	CUPIT	CPQ
CUPIT-A				0.684*
CUPIT-B	0.640*			0.724*
CUPIT	0.960*	0.830*		0.761*
CWS	0.569*	0.581*	0.626*	0.735*
	CPQ-A	**CPQ-B**	**CPQ-C**	**CUPIT**
CPQ-A				0.703*
CPQ-B	0.577*			0.665*
CPQ-C	0.468*	0.409*		0.408*
CPQ	0.919*	0.812*	0.655*	0.761*
CWS	0.713*	0.582*	0.404*	

*$p < 0.001$; CUPIT: Cannabis Use Problems Identification Test; CPQ: Cannabis Problems Questionnaire; CWS: Cannabis Withdrawal Scale.

analysis may be described as focusing on the physical and psychological health consequences, social consequences, and chronic negative consequences of cannabis use. While most of the items loaded above that deemed "good" or "very good," all loaded well above the minimum for interpretive purposes (0.30) (Comrey and Lee 1992; Nunnally 1978). Item subscale correlations were at least 0.50 or higher. In the present study, Cronbach's alpha coefficient for the first component was 0.82, for the second component it was 0.73, and for the third component it was 0.30 (0.87 for the CPQ). While evaluating the convergent validity by calculating a Pearson product–moment correlation, we found that CPQ-A, CPQ-B, CPQ-C, and CPQ were moderately correlated with CUPIT (r = 0.70, r = 0.67, r = 0.41, and r = 0.76, respectively) and CWS (r = 0.71, r = 0.58, r = 0.40, and r = 0.74, respectively).

CUD leads to negative consequences on a social or health level, both for the user himself and for the community (Beck and Legleye 2008). Therefore, screening with early intervention for cannabis problems is important both in the general population and in the clinical setting (Piontek, Kraus, and Klempova 2008). Although this study was performed in a clinical population, both CUPIT and CPQ might be helpful to detect the group of individuals in general population who were missed when relying on DSM-5 criteria but had problems related to synthetic cannabinoid/cannabis use. Giving guidance and early interventions to these cases may prevent them from developing a more severe disorder (Martin et al. 2006). On the other hand, in clinical settings, these scales are useful to recognize potential problem areas in a patient's life with synthetic cannabinoid/cannabis use disorder (Martin et al. 2006). By identifying and focusing on these problem areas earlier, clinicians may have an opportunity to offer a special treatment program and this may, in turn, minimize synthetic cannabinoid/cannabis-induced problems and also suggest a better treatment outcome. In addition, these scales can be used as an instrument to measure change during the treatment period (Martin et al. 2006).

CPQ and CUPIT are validated scales for cannabis users, but our results also suggest that they might be useful for synthetic cannabinoid use disorder. Synthetic cannabinoid use disorder is a growing problem all around the world (Loeffler, Delaney, and Hann 2016) and screening tools for synthetic cannabinoid use disorder and related problems may help clinicians to detect individuals at risk and to plan targeted interventions for them.

The limitations include the absence of female participants in the present study. The sample size was adequate for the analyses, but larger studies may provide better results. Also, in contrast with previous studies, test-retest reliability was not conducted in the present study. Finally, since we included only patients with cannabis and synthetic cannabinoid use disorder, receiver operating characteristic (ROC) analysis could not be conducted to find an optimal cut-off point for maximizing sensitivity for both currently diagnosable cannabis/synthetic cannabinoid use disorder and those at risk of meeting diagnostic criteria in the following 12 months. Thus, future research will need to evaluate the CUPIT and CPQ's characteristics, including test-retest reliability, using a larger and severe clinical sample of both female and male drug abusers that also includes a non-clinical sample.

In conclusion, the CUPIT and the CPQ have good psychometric characteristics among Turkish male outpatients with cannabis and synthetic cannabinoid use disorder. The importance of the present study is that these scales are validated not only for those with CUD, but also for those with synthetic cannabinoid use disorder, which was an important gap in the field of addiction.

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