RESEARCH ARTICLE

Sociodemographic and Clinical Features of Young Adult Males Using Synthetic Cannabinoid

Sentetik Kannabinoid Kullanan Genç Yetişkin Erkeklerde Sosyodemografik ve Klinik Özellikler

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SUMMARY

Object: Synthetic Cannabinoid (SC) use is becoming more widespread throughout the world. Studies that revealed user profiles indicate that the drug is especially popular among young men. Knowledge on sociodemographic, clinical characteristics and motivation for SC users in our country is limited. On the other hand, in spite of the increase of information known about symptoms of acute intoxication of SC use, physical and psychiatric consequences and loss of function due to long-term use of SC is limited. In this study, we aimed to investigate socio-demographic and clinical characteristics associated with SC use and the negative consequences caused by the use of SC. **Methods:** 166 male patients who admitted to the psychiatric outpatient clinic due to SC use disorder between November 2014 to April 2015 were enrolled in the study. Demographic data of patients, substance use characteristics, familial substance use, reasons for substance use, medical history, the problems related to drug use was questioned. **Results:** The age of onset for SC use was found to be 17.25 ± 2.30. SC using duration was 3.79 ± 2.15 years. The most common agents accompanying SC use were smoking (95.8%) and cannabis (88.6%). It was determined that 62.7% developed suicidal ideas due to SC use. Among psychiatric side effects, most common were euphoria, hallucinations, skepticism and suicidal ideation. About 1/3 of cases were found to live loss of business and legal issues depending on long-term SC use. 76.5% of the patients' consumed SC through inhalation and 22.9 % orally. It was determined that oral users began SC use at an earlier age than users via inhalation. **Discussion:** Despite the physical, mental, occupational, social and legal problems caused by the use of SC, it has become an important public health problem, especially among young men. Effective intervention programs for the use of outbreaking SCs need to be developed.

Key Words: Synthetic cannabinoids, socio-demographic features, clinical features.

ÖZET

Amaç: Sentetik Kannabinoid (SK), kullanımı tüm dünyada yaygınlaşmaktadır. Kullanıcı profillerini ortaya koyan çalışmalar maddenin özellikle genç erkekler arasında yaygınlaştığını göstermektedir. Ülkemizdeki SK kullanıcılarının sosyo-demografik, klinik özelliklerini ve madde kullanımına yönelik motivasyonlarına yönelik bilgiler kısıtlıdır. Öte yandan SK kullanımına bağlı akut intoksikasyon belirtilerine dair bilgilerin artmasına karşın uzun süreli SK kullanımına bağlı bedensel ve psikiyatrik sonuçlar ile yol açtığı işlev kayıpları hakkında bilinenler yetersizdir. Bu çalışmada, SK kullanımıyla ilişkili sosyodemografik, klinik özellikler ile SK kullanımının yol açtığı olumsuz sonuçların araştırılması amaçlanmıştır. **Yöntem:** Çalışmaya Kasım 2014-Nisan 2015 tarihleri arasında SK kullanımı nedeniyle psikiyatri polikliniğine başvuran SK kullanım kozukluğu tanısı konulan 166 erkek hasta alındı. Hastaların sosyodemografik bilgileri, madde kullanım özellikleri, ailesel madde kullanımı, madde kullanma gerekçeleri, tıbbi özgeçmişi, madde kullanımına bağlı yaşanan sorunlar ve istismar öyküsü sorgulandı. **Bulgular:** SK kullanımına başlama yaşı 17.25±2.30 olarak bulundu. SK kullanım süresi 3.79±2.15 yıldı. SK kullanımına en sık, sigara (%95.8) ve kannabis (%88.6) kullanımının eşlik ettiği bulundu. %62.7'inde SK kullanımına bağlı intihar düşüncesi geliştiği belirlendi. Psikiyatrik yan etkiler içerisinde en sık öfori, hallüsinasyon, şüphecilik ve intihar düşüncesinin geliştiği saptandı. Uzun süreli SK kullanımına bağlı olarak olguların yaklaşık 1/3'nün iş kaybı ve yasal sorun yaşadığı bulundu. **Sonuç:** SK kullanıcılarının sosyo-demografik özelliklerinin ve kullanma gerekçelerinin belirlenmesi, etkin müdahale programlarının geliştirilmesine katkıda bulunabilir. Ayrıca SK'lerin uzun süreli kullanımının yol açtığı olumsuzlukların ortaya konulmasının bu psikotrop ajanların popülerliğine katkıda bulunan doğal ve zararsız ürünler olduğu yönündeki genel kanının değişimine katkıda bulunabileceği değerlendirilmektedir.

Anahtar Sözcükler: Sentetik kannabinoidler, sosyodemografik özellikler, klinik özellikler.

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INTRODUCTION

The health problems that arise due to the increasing use of Synthetic Cannabinoids (SC) has reached serious levels. Use of SC is reported to be popular especially among teens and young adults (1). SCs began to be marketed through supermarkets and internet since 2004 in Europe. Although it was forbidden to use SC in 2008 in the United States, illegal sales of these substances continues (2). Lifetime prevalence of SC use was found as 8.1-16.8% at follow-up studies (3).

Increase in the cases of intoxication caused by SC use is striking. According to the US National Poison Data System records, the number of calls related to the use of the SC-induced side effects in 2015 showed a 229% increase compared to the previous year (4). Similarly, dramatic increase have been seen in intoxication cases due to use of SC in Japan in the last few years. As well as physical complications, behavioral pathologies and psychotic symptoms were also observed in these cases (5). In US National Poison Data System records of 2015, serious side effects has been found in 11.3% of the acute intoxication cases due to SC use (4).

Studies in Europe, US and Japan revealed that SC users vary among communities in terms of socio-demographic and clinical characteristics. While it was found that users in Europe and the US are mostly adolescent and young adult males (1,6), SC using age in Japan was reported to be higher when compared to Western countries (5). It was found in studies that the use of other psychoactive substances with SC is common and the most commonly used psycho-active agents are alcohol and cannabis (7). SC are most commonly consumed in the form of smoking (7,8). The most reasons of SC using are curiosity, relaxation request, not be detected in routine testing, to be easily accessible and more powerful effect than cannabis (9).

There are few studies on the use of SC in terms of psychiatry in Turkey (10,11,12). In this study, we aimed to investigate socio-demographic and clinical characteristics associated with SC use and the negative consequences caused by the use of SC in an example of outpatient population.

METHODS

166 consecutive male patients referred to psychiatry outpatient clinic between November 2014 and April 2015, and diagnosed with "Cannabis Use Disorder" by a psychiatrist according to DSM-5 diagnostic criteria were enrolled in study. There is no female patient diagnosed with 'Cannabis Use Disorder' at study period. As well as the clinical assessment by a psychiatrist; sociodemographic information (age, education level, employment status) and legal (cigarettes, alcohol) and illegal substance abuse, physical and sexual abuse history, family history of substance abuse were questioned. Also, about the use of SC of patients; the age of onset, frequency of use, usage style, withdrawal symptoms, whether the thought of cessation is present, case of illegal actions for providing SC, medical help to stop, side-effects that was experienced, the problems caused by SC (job loss, school loss, accident, injury, health, legal) and reasons for use were investigated. Those considered to be under the influence of substance during interviews and those who refused to participate the study were excluded from the study. The trial was performed in accordance with the Declaration of Helsinki and subsequent revisions and approved by local ethics committee. Written informed consent was obtained before admitting subjects into the study.

STATISTICAL ANALYSIS

The data were analyzed with SPSS 15.0. Continuous variables are presented as mean ± standard deviation, while categorical variables are expressed as frequency and percentages. Student t test and chi-square test were used to compare respectively for continious and non-continious variables between oral and inhalation administration groups.

RESULTS

In the study, a total of 24 896 patients admitted to the psychiatry clinic between November 2014 and April 2015, 166 (0.67%) were diagnosed with SC use disorder.

Sociodemographic features

All of the patients in the study sample were men, and the sociodemographic data is given in Table 1.

Clinical features

Clinical features associated with the use of SC is given in Table 2. Unemployment rate in taking SC more often than 5 times a week was 48/108 (44.5%), while it was found as 19/58 (32.7%)in users taking SC 4 times and fewer. Reasons for SC use is shown in Table 3.

Side effects due to SC use are given in Table 4. Euphoria (74.1%), hallucination (74.1%), skepticism (64.5%) and suicidal ideation (62.7%) were the most common psychiatric side effects.

When side-effects were compared that arise due to the usage patterns; there were statistically significant differences in terms of appetite and difficulty in breathing and pupil changes (Table 5). Everyday SC users was found to begin at a lower age than less frequent SC users (x^2 = 33.431, p <0.001). Problematic areas related to the use of SC are shown in Table 6.

DISCUSSION

Prevalence-frequency

In the study, the proportion of patients with diagnosis of SC use disorder was found to be 0.67% among patients who admitted to psychiatry outpatient clinic and it was determined that 54.8% of cases did not take medical advice previously. Only half of the SC users was seeking psychiatric treatment and referred to the psychiatric clinic. In our study, making no toxicological analysis may have led to the failure to diagnose some SC users. The frequency of SC use is estimated to be 2.8% in Germany and 4% in France (13,14). This rate in our study may not reflect real value. In a recent study, the frequency of SC use among patients who were hospitalized in a substance use disorder treatment center was reported to be 43% (12). Serving only to drug users of this study center thought to be led to relatively high proportion for use of SC.

Age of onset-employment status

In the study, age of onset of the SC users was 17.25 ± 2.30, duration of education was found to be 8.72 ± 3.09 years. In other studies for SC users mean age of first use of Spice products was respectively 28.4, 21, 26 (5,6,7). These findings shows that those begin at an earlier age to SC use in our country than Japan, US and Europe.

A recent study carried out in our country have reported that SC use begin during adolescence and at an earlier age than other substances (12). In our country, it was reported that easy access and cheapness contributed to the widespread use of SC, and according to official data the amount of captured SC had a 17-fold increase in three years (15). In accordance with the results of our study, it is considered that SD prevention programs should be conducted especially in adolescence.

In this study, unemployment rate among SC users was 40.4%, this rate was found to be 32.7% among

Table 1: Socio-demographic characteristics of the patients with SC abuse disorder.

	Case (n=166)
Age (years)	
mean ± SD	21.04±1.04
median (min -max)	21 (20-24)
Education level (years)	
mean ± SD	8.72±3.09
median (min -max)	8 (0-16)
Working status	
Not working n (%)	67(40.4)
Working n (%)	99(59.6)

Table 2: Clinical features associated with the use of SC.

Clinical feature	**Case (n=166)**
The age of onset (years)	
mean ± SD	17.25±2.30
median (min -max)	18(11-22)
Duration of using (years)	
mean ± SD	3.79±2.15
median (min -max)	3(0-9)
Accompanying drug use *	**n (%)**
Cigarette	159(95.8)
Cannabis	147(88.6)
Alcohol	88(53)
Cocaine	72(43.4)
Heroin (nasal inhalation)	63(38)
Inhalant	43(25.9)
Ecstasy	56(33.7)
LSD	16(9.6)
Amphetamine	21(12.7)
None	7(4.2)
SC Using method	
Inhalation (Cigarette, pipe, waterpipe, bong)	127(76.5)
Oral	38(22.9)
Injection	1(0.6)
Weekly Frequency of Use	
Daily	92(55.5)
5-6 times	16(9.6)
3-4 times	19(11.4)
1-2 times	39(23.5)
Medical help for cessation	
None	91(54.8)
One time	55(33.1)
Regular	20(12.1)
Withdrawal	
Yes	133(80.1)
No	33(19.9)
Desire for cessation	
Yes	131(78.9)
No	35(21.1)
Illegal action for SC supply	
Yes	48(28.9)
No	118(71.1)

***:** Some participants choose multiple options.

users who use 4 times or less a week while it was 44.5% in users who use SC more frequent than 4 at a week. Frequency of use of SC affects the unemployment level.

Comorbid drug use

In the study, it was found that the most common agents accompanying SC use were smoking, cannabis and alcohol. It was determined that 95.8% of the cases had concurrent smoking and 88.6% consumed cannabis. Smoking and cannabis use were found to frequently accompany to SC use also in other studies (3,6,9,16). Additionally, it was revealed that 53% of patients had comorbid alcohol use. Cigarettes, alcohol and, cannabis, are as cheap and easy to obtain as in SC, this may be the reason for comorbid use of them. As a result, use of multiple substances frequently accompany to the use of SC also in our patients as in other societies.

Route of administration

It has been found in the study that SC was most frequently consumed by inhalation, the oral administration was second. Similarly, it was stated that SC were most consumed by inhalation (7,8,9). In our study, preferred method for consumption as steam was through smoking in most of the cases. Conveniently, Bonar et al. stated smoking as the most commonly used method, Barrat et al. reported the most commonly used method as waterpipe (8,9). Unlike other studies (7,8,9) consumption as chewing in the mouth of SC was found high (22.9%) in our study. There are a small number of case reports in the literature that psychotropic effects are available depending on the oral use of SC (17).

Table 3: **Reasons for SC use**

Reasons for SC use (n=166)	n	%
Friend group	118	71.1
Relaxing effect	110	66.3
Euphoric effect	107	64.5
Dependency	69	41.6
Cheapness	64	38.6
Being easily accessible	64	38.6
Aim of trying	51	30.7
to strengthen the cognitive functions	27	16.3
Analgesic effect	26	15.7
not be detected by routine screening	19	11.4

*: Some participants choose multiple options.

Table 4: Side effects due to SC use.

Clinical side effects (n=166)	n	%
Slowing in movements	121	72.9
Altered consciousness	119	71.7
Speech difficulties	118	71.1
Loss of balance	113	68.1
Tremor	107	64.5
Headache	76	45.8
Involuntary movement	74	44.6
Epileptic seizures	19	11.4
Euphoria	123	74.1
Hallucination	123	74.1
Skepticism	107	64.5
Suicidal ideation	104	62.7
Memory loss	92	55.4
Panic attack	88	53
Depression	82	49.4
Anxiety	79	47.6
Palpitation	120	72.3
Irregular Blood pressure	57	34.3
Dry mouth	144	86.7
Weakness	136	81.9
Change in appetite	131	78.9
Watery eyes	108	65.1
Difficulty breathing (dyspnea)	103	62
Nausea	88	53
Fading skin	63	38
High fever	57	34.3
Pupillary changes	54	32.5
Skin eruption	39	23.5

*: Some participants choose multiple options.

In our study, statistically significant differences was found in terms of side effects that occur depending on the consumption method of SC. Consumption by inhalation was found to produce more appetite changes (x^2 = 5,585, p = 0.018) and cause difficulty in breathing than oral way. On the other hand, orally consumption was found to lead more pupil changes than consumption by inhalation. No diffe-rence was determined in terms of frequency of use between inhalation and oral SC users (x^2 = 2.17 and p = 0.54), but oral SC users started using SC at an earlier age than those using by inhalation (t=2.58, p=0.01).

Table 5: Comparison of side effect and clinical features of inhalation or oral administration of Synthetic cannabinoids.

	Synthetic cannabinoids using pattern		Statistics	
	Using via inhalation (n=127) n (%)	**Oral administration (n=38) n (%)**	**x^2/t**	**p**
Change in appetite				
Yes	21 (16.5)	13 (34.2)	5.585*	0.018*
No	106 (83.5)	25 (63.8)		
Pupiilary changes				
Yes	94 (74.0)	18 (47.4)	9.525*	0.002*
No	33 (26.0)	20 (52.6)		
Difficulty in breathing				
Yes	43 (33.9)	20 (52.6)	4.367*	0.037*
No	84 (66.1)	18 (47.4)		
Using frequency (weekly)				
>4	81(63.8)	26(68.4)	2.172*	0.538
≤4	46(36.2)	12(31.6)		
Onset age of using (mean±SD)				
	17.71±2.16	16.61±2.37	2.579**	0.011

*: Chi-square value, **: Student –t test value.

Frequency of use, indications and side effects

It was found in the study that 55% of cases use SC every day, 76.5% more than two in a week. Everyday use of SC has been reported as 7% in the Barrett et al.' s study and 4.8% in Winsock et al.'s study (6,9). Use of daily SC was more frequent than other community users. The age of onset of every day SC users was found to be lower than those who use less often SC (t=33.431, p<0.001).

In the study, 80.1% of the cases was found to experience withdrawal symptoms, 78.9% wants cessation, 41.6% stated that they use SC due to dependence. Neurological, psychiatric and somatic side effects was determined due to SC use. The most common neurological side effects were slowing of movements, slurred speech, loss of consciousness, and change in balance. Tremor was determined in 64.5% of cases, involuntary movements occured at 44.6%, epileptic seizures developed in 11.4% in our study. These neurological symptoms due to the use of SC are usually seen during intoxication, but in some cases it has been reported that they could be observed for a longer time (2).

The most common experienced psychiatric side effects were euphoria, hallucination, skepticism and suicidal ideation. The euphoria was the most common psychiatric side effect experienced in this study, and it was reported in the first place among the reasons for the use of SC. Therefore euphoria is considered to have a significant impact on the continuity of the SC use. Skepticism in relation to the SC use was detected as 64.5%, hallucinations was 74.1%. Acute psychotic symptoms have been reported to trigger in susceptible individuals or in patients who have a history of psychiatric illness with SC effect (18).

Suicidal ideation related to the use of SC was found to develop in 62.7% of patients in the study. SC use at young soldiers was reported to be high in studies (19) and the evidence is increasing that it may be associated with suicide attempts in conjunction with the other facilitator factors (20). There is a

Table 6: The problematic areas related to the use of SC.

The problematic areas related to the use of SC (n=166)	Number (n)	%
Job losses	55	33.1
Legal issues	51	30.7
Health problems	46	27.7
Injury	45	27.1
Dropped out of school	42	25.3
Accident	31	18.7

*: Some participants choose multiple options.

need for new studies examining the relationship between SC use and suicide.

About half of the cases was found to experience memory problems, depression, panic attacks and anxiety. Related with that, it was reported that SC use impair memory function in the acute phase (2), long-term heavy cannabis use caused a decrease in hippocampus volume (21). In our study, half of patients have experienced depression, who are largely multiple substance user and heavy drinkers. Similarly, Bonar et al. determined that patients with long-term SC use had higher frequency for the use of other substances and had more severe depression (8). Anxiety and panic attacks have been reported to occur frequently associated with the use of SC (2,5,22).

Reasons to use

The most common reason in the study to use SC was found as friend group (71.1%). Similarly, it has been shown in previous studies that 91% of the SC users had contact with the substance by a friend and 76% provided SC from a friend (16). In this study, the relaxing (66.3%) and euphoric effects (64.5%) were found to be other reasons for preference. 41.6% of the patients stated that they use SC because of being dependent. Only 16% of patients in the Bonar et al.' s study reported that they used SC for the same reason (8). These difference in our study is considered to be due to the high proportion of patients living withdrawal symptoms. 38.6% of the patients reported that they preferred SC because it is cheaper and easier to reach than other psychotropics. Despite being banned since 2011, it is understood that SC is still easy to obtain in our country. 11.4% of the cases prefer SC because of not to be detected in routine screening. This rate is similar to some studies (9), but lower than some (7,8). The lack of knowledge about the presence or absence of identifying SC in routine screening of SC users in our country can cause this condition.

Negative consequences of SC use

The patients most common experienced loss of business due to SC use. When taken together the high rate of dependence level of cases, and the physical and psychological side effects experienced, the reason for the loss of business at one out of every three user is better understood.

Also, 30.7% of cases faced with legal problems, the proportion of cases who made illegal actions for the supply of SC has been determined in 28.9%. In other words, one out of every three users are faced with legal issues and made an illegal action for providing SC. In accordance, a recent study reported that SC users are faced with more legal problems compared to other drug users, and criminal records can be used as a marker for predicting the use of SC (12).

Despite the cases largely live side effects, rate of regular medical treatment is 12.1%. It is considered that marketing SC as natural harmless products and low awareness about the negative impact on the health due to recent emergence at all over the world reduce the medical help rates.

In association, it has been reported that, despite the harmful consequences, the SC users show very little help-seeking behavior (9). %27.7 of patients reported that they have health problems due to long term SC use in this study.

Depending on the use of SC, 27% of the cases was determined to have injuries and accidents. It has

been reported in one study that, 10.8% of patients admitted to the emergency room after SC use had pathological behaviors as harm to around and self-harm, suicide and traffic accidents (5). Injuries and accidents are evaluated to occur due to neurological and psychiatric symptoms of intoxication.

25.3% of SC users in the study were found to drop out of school. In association, the average training time of SC users have been reported to be shorter than other substance users (12). As a result, SC use which was initiated at an early age is considered to lead dropout and shorter training time.

Limitations

Cross-sectional design of the study, the absence of a control group, to obtain data from feedback of patients from the retrospective data constitute the methodological limitations of this study. Because of not making a toxicological examination, not determining chemical structure of substances which the patient declares that he uses is another limitation of the study. Being all of the patients male gender in the study makes it difficult to generalize the results. Controlled follow-up studies that contain toxicological and biochemical analyzes are needed for more objectively determining the negative consequences caused by SC.

CONCLUSION

In this study, the socio-demographic and clinical features of young men who applied to the psychiatry outpatient clinic for the use of SC were evaluated. Young age of SC in our country compared to other countries were found to be significantly lower and heavy smokers were found to be at higher levels. On the other hand, it has been found that the frequency of use may be related to the unemployment rate. It has been shown that SC usage way leads to different psychotropic effects, and chewers experience more visual problems than others. Although SC users have a high rate of suicide ideation, there is a need for new studies to investigate the causality between these two. The use of SC has been found to have a very low rate of seeking medical help before attendance, despite the fact that it is accompanied by educational and occupational impairments and, legal problems. To determine the socio-demographic characteristics and reasons for the use of SC users will contribute to the development of effective intervention programs.

As a result, in addition to the acute side effects of SC, permanent psychiatric and physical side effects was determined due to the long-term use of SC which has become a common health problem for the whole world. SC use was found to have serious consequences affecting the level of functionality in the form of loss of business, school dropout, delinquency, and having accident.

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