

Physical and Psychological Effects of Cannabinoids and Synthetic Cannabinoids among Substance Abusers

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Abstract

Background: Substance abuse a chronic relapsing disorder that produces a dramatic global health burden worldwide, Moreover, one of the most abused drugs is Cannabinoids(C) and synthetic Cannabinoids (SC). Cannabinoids are found in all cannabis preparations, the principles psychoactive ingredient is, Tetra-Hydro- Cannabinol (THC). All Cannabinoids substances natural or synthetic have the same influence as THC. **Aim:** this study aimed to assess physical and psychological effects of cannabinoids and synthetic cannabinoids among substance abusers. **Tools of data collection:** this study tools divided into five tools (1) Socio-demographic data tool (2) Physical symptoms study tool (3) Anxiety study tool (4) Aggression study tool (5) Depression study tool. **Result:** Numerous effects are observed by cannabinoids and synthetic cannabinoids use, include adverse physical symptoms and psychological effects as high severity levels of anxiety, aggression and depression. **Conclusion:** Cannabinoids group were had mild anxiety, aggression and moderate depression but Synthetic Cannabinoids group were had moderate anxiety, moderate aggression and mild depression. **Recommendations:** based on the results of this study, the following recommendations are suggested: Planning for psychosocial care program to provide psychosocial support for client with cannabinoids and synthetic cannabinoids substance abusers. Provide psycho-educational program for patient about the risk of cannabinoids and synthetic cannabinoids substance.

Key words: cannabinoids, synthetic cannabinoids, physical, psychological, effects, substance abusers.

Introduction

Substance abuse can be defined as using a drug in a way that is inconsistent with medical or social norms despite negative effects. It is also known as the state when a person experiences severe psychological and behavioral dependence (Antony, 2020).

However it can also be regarded as a substance that is used for its psychoactive properties. Some intoxicants are legal such as alcohol, and some are illegal, such as, heroin, cannabis, and cocaine. The legality of some intoxicants varies depending on country and region. For example, in Finland, under the Narcotics act (L 373/2008), the use of narcotic drugs is illegal. In this literature review these narcotic drugs will be referred to as

“substances” and will refer to the use of illegal substances which are used to achieve an altered state of mind. These substances can be organic matter such as plants or mushrooms, synthetic substances, or prescription medications used recreationally (Holmberg, 2018).

Addiction has many obvious negative consequences. It results in organ function changes, similar to other chronic diseases. It also affects the circuitry of the brain in many ways, including those circuits involving reward, memory, learning, motivation, motor activity, and the ability to inhibit behavior. Addiction also affects several neurotransmitter pathways (e.g., dopamine, serotonin), and such changes can result in an inability to stop the drug use, even when life is affected negatively (Markle, 2017).

The use of illicit drugs includes Cannabinoids and Synthetic Cannabinoids has become a worldwide health problem. It leads to numerous consequences at the health, economic, social and legal levels. These consequences interfere with the development of the countries and their efforts to respond to the needs of their populations. Apart from its economic cost, drug abuse leads to social problems among family members, abnormal behavior, crime, health and psychological problems as well as economic difficulties (Okasha, 2004).

Significant of the study:

Cannabinoids and synthetic cannabinoids global survey annually designed in 2019 and anonymous survey to investigate illicit drug misuse. The data was collected from 123 countries around the world, obtaining data from 22,289 respondents. The result was 37% cannabinoids abuse and 21% Synthetic Cannabinoids abuse (WHO, 2019)

Aim of the study:

This study aims to assess the physical and psychological effects of cannabinoids and synthetic Cannabinoids among substance abusers.

Research questions:

- What are the physical effect of cannabinoids and synthetic Cannabinoids among substance abusers?
- What are the psychological effect of cannabinoids and synthetic Cannabinoids among substance abusers?

Subject and Method:

1-Technical design

The technical design includes research design, setting, subject, and tool of data collection

Research Design:

A descriptive exploratory design was used for this study.

Setting:

The study was conducted at the El-Abbassia Hospital at Cairo governorate. El-abbassia Hospital or the psychiatric health hospitals provides care for all substance use disorders patients.

Subjects:

A Convenient sample of (100) cannabinoids and synthetic cannabinoids substance patients were included in the study. The total study number was hundred subjects divided into two group, fifty subject abuse cannabinoids and other fifty subject abuse synthetic cannabinoids. The subjects were obtained from inpatient and outpatient departments

Sample size:

The sample size was calculated based on the previous year (2019) report at Psychiatric Mental Health Hospital. The total number of Cannabinoids and Synthetic Cannabinoids substance abusers.

The sample size was calculated by (Slovin's formula, 2018).

$$n = \frac{N}{1 + N(e)^2}$$

Where: **n** = sample size, **N**= total population size, **e** = margin error.

$$n = \frac{135}{1+135(0.05)^2} = 100 \text{ patients}$$

Where, *n* = sample size, *N* = total population number (135), and *e* = margin error (0.05).

Two tools were used to fulfill the objectives of this study:

Tool (1): A structured interview questionnaire: It included the following parts:

Part (1): Demographic characteristics of the cannabinoids abuse: (age, sex, marital status, educational level, occupation).

Health history of the studied subjects regarding history of present illness, past history and family history, peers relationship, pattern of drug use and effects of the addiction.

Part (2): Physical symptoms questionnaire:

This questionnaire was developed by the researcher; it is consisted of 33 items which used to measure physical symptoms among cannabinoids and synthetic cannabinoids substance abuser.

This tool has three point as the following; No=0, to some times =1& yes=2.

Part (3): Psychological symptoms:

Include three scale anxiety scale, aggression scale and depression scale.

Tool 1: Anxiety questionnaire:

This questionnaire was developed by **Janet Tylor** in 1953. This tool adapted and translated by researcher. It consists of 26 questions. This was used to assess anxiety among substance abusers. This tool has three point as the following; No=0, to some times =1& yes=2.

Tool2: Aggression questionnaire:

This questionnaire was developed by researcher. It consists of 24 questions to assess aggression level among cannabinoids and synthetic cannabinoids substance abusers. This tool has three point as the following; No=0, to some times =1& yes=2.

Tool 3: Depression questionnaire:

This questionnaire was developed by researcher. It consists of 20 questions to assess depression level among cannabinoids and synthetic cannabinoids substance abusers. This tool has three points as the following; less than usual= 0, usual = 1 and more than usual =2

Validity and reliability:

The tools were ascertained by a jury of three experts in the field mental health nursing. Their opinions elicited regarding the format,

layout, consistency, accuracy and relevancy of the tools.

• A pilot study:

It was carried out on 10% of the children (10 patients) to test the clarity, the applicability of the tools and to estimate the time needed to fulfill each sheet and no modifications were needed and they were included in the study.

The validity of the first tool was established by five experts in the psychiatric and nursing field. The content validity index was 0.94 and the internal consistency was 0.7.

Ethical consideration

The research proposal was approved from Ethical Committee in the Faculty of Nursing. There was no risk for the study subjects during application of the research. The study followed common ethical principles in the clinical research. Confidentiality and anonymity were assured. Patients had the right to agree or disagree to participate in the study and to withdraw them from the study at any time without any effect on the care provided for their children. Study subjects privacy was considered during the collection of data.

Field of work

This study was carried out through a period of seven months started from October 2021 to April. This study will be carried out 2 times per week. At first, the research explained the aim and nature of the study to the participants individually. The questionnaire sheet distributed to the participant individually; each participant had adequate time to complete questionnaire sheets which will be checked for its completeness after the participants filling it. The average time required to fill full the questionnaire sheet was (25- 35) minutes.

Administrative design:

An official letter requesting permission to conduct the study will be delivery to the manager of El Abbasia Mental Hospital. This letter will include the aim of the study and a photo copy from data collection tools in order to get the permission and help for data collection.

Statistical design:

The collected data were organized, revised, scored, tabulated and analyzed. Statistical analysis was done through computer using the statistical package for social science (SPSS) version 20 and Microsoft Excel version 2010. Quantitative data were presented as mean and standard deviation (SD) while qualitative data were expressed as frequency and percentage. Chi-square test used as a test of homogeneity to test difference between two groups. Mann whitney test and Kruskal Wallis test were used to test the significance between variables as the variables were not normally distributed. The observed differences and associations were considered as follows: • • $P > 0.05$ was considered non-significant (NS). $P \leq 0.05$ was considered Significant (S). 7

Results:

Table (1): illustrate that, 42.0% and 86.0% of cannabinoids and synthetic cannabinoids groups were aged 18 to less than 25Years old with mean age 28.44 ± 7.84 and 25.60 ± 6.19 respectively.

Table (2): 64.0% and 90.0% of cannabinoids and synthetic cannabinoids groups were aged during starting the drug from 18 to less than 25Years old respectively. Also, 46.0% and 48.0% of cannabinoids and synthetic cannabinoids groups were taking the drug 4-6times daily and 1-3times daily respectively.

Table (3): demonstrates that, 64.0% and 66.0% of cannabinoids and synthetic cannabinoids groups respectively had weak trust in other people. Also, 64.0% and 50.0% of cannabinoids and synthetic cannabinoids groups respectively suffered from Psychological abuse during childhood or early adolescence. As well as, there was someone in the family taking drugs in 66.0% and 64.0% of cannabinoids and synthetic cannabinoids groups respectively.

Figure (1): illustrates that, 84.0% and 60.0% of cannabinoids and synthetic cannabinoids groups respectively had mild physical symptoms. Also, 16.0% and 22.0% of both groups had moderate physical symptoms respectively. While no one and 18.0% of both groups had severe physical symptoms respectively.

Figure (2): illustrates that, 56.0% of cannabinoids group had moderate anxiety level and only 2.0% of them had severe anxiety level. While, 50.0% of synthetic cannabinoids group had mild anxiety level and only 10.0% of them had severe anxiety level. 70.0% of cannabinoids group had mild aggression level and only 4.0% of them had severe aggression level. While, 76.0% of synthetic cannabinoids group had moderate aggression level and only 4.0% of them had severe aggression level. 70.0% of cannabinoids group had moderate depression level and only 4.0% of them had severe depression level. While, 48.0% of synthetic cannabinoids group had mild depression level and only 14.0% of them had severe depression level

Table (4): illustrates that, there was a significant statistical relationship between patients age and severity of physical symptoms in cannabinoids and synthetic cannabinoids groups at P -value = 0.033 and 0.045 respectively. Also, there was a significant statistical relationship between patients sex and severity of physical symptoms in cannabinoids and synthetic cannabinoids groups at P -value = 0.012 and 0.022 respectively

Table (5) illustrates that, there was no significant statistical relationship between patient's age, sex, occupation and residence and severity of psychological symptoms in cannabinoids and synthetic cannabinoids groups.

Table (1): Distribution of segment qualities of the concentrated on subjects (n=100).

Demographic characteristics	Items	Cannabinoids group (n=50)		Synthetic Cannabinoids group (n=50)	
		N	%	N	%
Age	18-<25Years	21	42.0	43	86.0
	25-<35Years	17	34.0	6	12.0
	35-<45Years	12	24.0	1	2.0
	Mean ± SD		28.44 ± 7.84		25.60 ± 6.19
Sex	Male	41	82.0	45	90.0
	Female	9	18.0	5	10.0
Educational level	None	0	0.0	0	0.0
	Reading/writing	9	18.0	8	16.0
	Preparatory	2	4.0	3	6.0
	Secondary	22	44.0	29	58.0
	University	17	34.0	10	20.0
Occupation	Working	36	72.0	32	64.0
	Not working	14	28.0	18	36.0
Marital status	Single	20	40.0	21	42.0
	Married	24	48.0	22	44.0
	Divorced	6	12.0	6	12.0
	Widow	0	0.0	1	2.0
Monthly Income	Satisfactory	18	36.0	16	32.0
	Un satisfactory	22	44.0	20	40.0
	Sufficient/spared	10	20.0	14	28.0
Residence	Rural	16	32.0	6	12.0
	Urban	34	68.0	44	88.0

Table (2): Distribution of heath history of the studied subjects regarding history of present illness (n=100).

History of present illness	Cannabinoids group (n=50)		Synthetic Cannabinoids group (n=50)	
	N	%	N	%
18-<25Years	32	64.0	45	90.0
25-<35Years	16	32.0	5	10.0
35-<45Years	2	4.0	0	0.0
1-3times daily	21	42.0	39	78.0
4-6times daily	23	46.0	10	20.0
≥7 times daily	6	12.0	1	2.0
1-2 years	15	30.0	26	52.0
3-4 years	21	42.0	23	46.0
≥ 5 years	14	28.0	1	2.0

Table (3): Distribution of health history of the studied subjects regarding past history and family history (n=100).

Past history and family history	Cannabinoids group (n=50)		Synthetic Cannabinoids group (n=50)		X ²	P-value
	N	%	N	%		
How do you Trust other people						
Strong	18	36.0	17	34.0	0.044	0.834
Weak	32	64.0	33	66.0		
Have you suffered during childhood or early adolescence from						
Physical abuse	25	50.0	11	22.0	67.037	0.254
Sexual abuse	0	0.0	4	8.0		
Psychological abuse	32	64.0	25	50.0		
None	12	14.0	20	40.0		
Family history						
Is there anyone from your family taking drugs						
Yes	33	66.0	32	64.0	0.044	0.834
No	17	34.0	18	36.0		
If yes, relationship						
	n =33		n =32			
Father / mother	14	42.4	8	25.0	3.288	0.193
Sisters/brothers	5	15.2	10	31.2		
Relatives	14	42.4	14	43.8		
Is there anyone from your family supports you						
Yes	28	56.0	31	62.0	0.372	0.542
No	22	44.0	19	38.0		
Have you any communication problems in your family						
Yes	41	82.0	45	90.0	1.329	0.249
No	9	18.0	5	10.0		

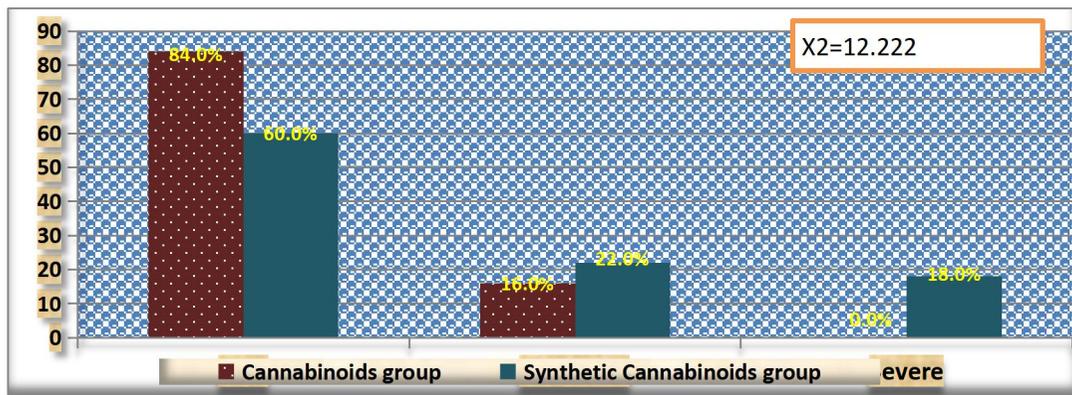


Figure (1): Severity level of physical symptoms among both groups (n=100)

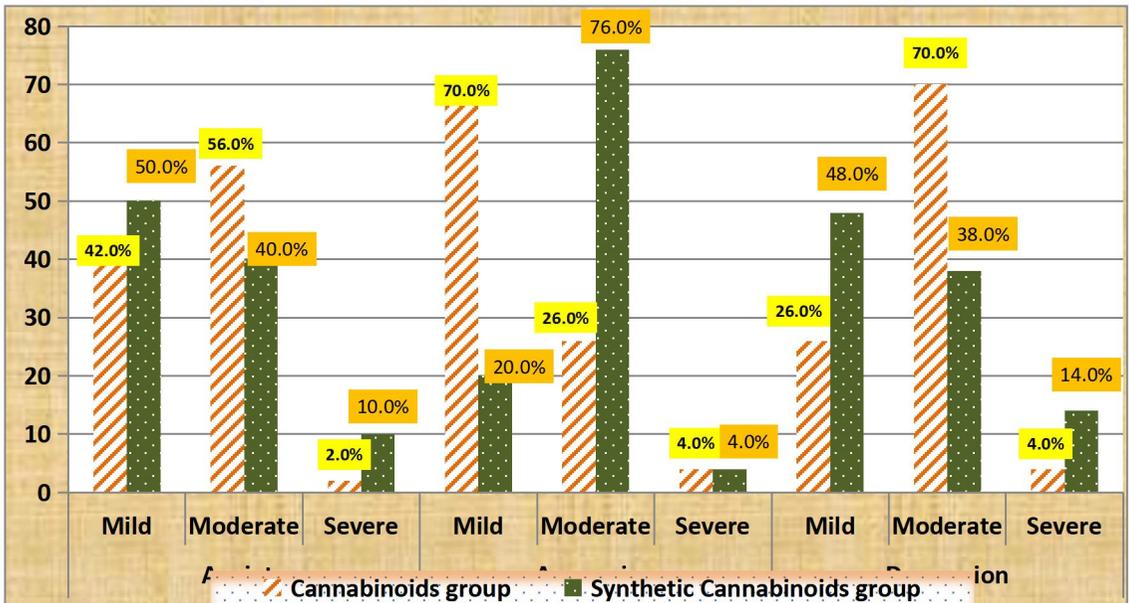


Figure (2): severity level of all psychological symptoms (Anxiety, Aggression and Depression)

Table (4): Relationship between demographic characteristics (age, sex, occupation and residence) of the studied patients (both groups) and their total physical symptoms (n=100).

Demographic characteristics	N	Severity of Physical Symptoms							
		Cannabinoids group (n=50)		Synthetic Cannabinoids group (n=50)					
		Mean Rank	Mann Whitney (U) test	P-value	N	Mean Rank	Mann Whitney (U) test	P-value	
Age	18<25Years	21	31.65	4.984	0.033* (S)	43	26.34	1.530	0.045* (S)
	25<35Years	17	23.76			6	18.75		
	35<45Years	12	20.81			1	30.00		
Sex	Male	41	27.02	12.00	0.012* (S)	45	27.04	2.252	0.022* (S)
	Female	9	18.56			5	11.60		
Occupation	Working	36	23.94	1.218	0.223 (NS)	32	25.48	0.010	0.992 (NS)
	Not working	14	29.50			18	25.53		
Residence	Rural	16	23.69	0.607	0.544 (NS)	6	21.50	0.718	0.493 (NS)
	Urban	34	26.35			44	26.05		

Table (5): Relationship between demographic characteristics (age, sex, occupation and residence) of the studied patients (both groups) and their total psychological symptoms (n=100).

Demographic characteristics	Severity of psychological Symptoms							
	N	Cannabinoids group (n=50)			Synthetic Cannabinoids group (n=50)			P-value
		Mean Rank	Mann Whitney (U) test	P-value	N	Mean Rank	Mann Whitney (U) test	
Age	18-25Years	21	28.26			43	25.03	
	25-35Years	17	20.88	2.625	0.269 (NS)	6	29.08	0.417
	35-45 Years	12	27.47			1	24.0	(NS)
Sex	Male	41	26.39	14.00	0.355 (NS)	45	25.58	0.113
	Female	9	21.44			5	24.80	
Occupation	Working	36	25.29	24.418	0.871 (NS)	32	26.47	0.627
	Not working	14	26.04			18	23.78	
Residence	Rural	16	24.25	25.617	0.677 (NS)	6	17.17	1.493
	Urban	34	26.09			44	26.46	

Discussion:

Substance addiction is a chronic relapsing disorder that produces a dramatic global health burden worldwide. No effective treatment of drug addiction is currently available probably due to the difficulties to find an appropriate target to manage this complex problem raising the needs for further identification of novel therapeutic approaches (Hall & Lynskey, 2018).

Cannabinoids are an illicit drug that is capable of causing physical and psychological effects. Adverse physical health effects include tachycardia, myocardial infarction, acute kidney injury, seizures and gastrointestinal problems. During driving, poor coordination, sedating effects, confusion and impairment of motor skills can be noted (Karila et al., 2018).

The goal of the study was to assess the physical and psychological effects of cannabinoids and synthetic cannabinoids among substance abusers.

The results of the current study reported that regarding the demographic characteristics of the studied subjects, the findings of the current study suggested that the mean age of studied subjects was age 28.44 ± 7.84 years in cannabinoids group and 25.60 ± 6.19 in the synthetic cannabinoids group. As shown in

table (1). This can be explained here by fear from addiction stigma especially with females in our society. These results were also inconsistent with Abdelmoneim et al., (2022) in their study that titled "Clinical pattern of cannabinoids users in Upper Egypt". They reported that regarding the epidemiological data, the study showed that most users of synthetic cannabinoids were in the adolescence and middle age group (15–<35) representing about two thirds of the studied cases.

Regarding the health history of the present illness, more than two thirds and most of cannabinoids and synthetic cannabinoids groups were aged during starting the drug from 18 to less than 25Years old respectively. Moreover, all of both groups were voluntary admitted to hospital as shown in **table (2)**. It's a matter of curiosity of adolescents about addictive substances, especially in addictive peers around. These results were consistent with Abdelmoneim et al., (2022) and Clayton et al., (2017) in their study that titled "Health risk behaviors with synthetic cannabinoids versus marijuana". They stated that concerning the age of starting addiction, the mean age of starting substance abuse was 18.5 (adolescence age).

Subjects regarding past history and family history; the current study showed that about two thirds and one half of both

cannabinoids groups suffered from psychological abuse during childhood or early adolescence. As shown in **tables (3)**. **London et al., (2017)** supported these results in their study that titled “Synthetic cannabinoids and cannabinoid designer drugs pose a major risk for public health”. They concluded; Family history became an important factor to evaluate in substance misuse.

The results of the current study reported that severity level of physical symptoms in the synthetic cannabinoids group was greater compared to the severity level in the cannabinoids group as shown in **(figure 1)**. This can be explained as synthetic cannabinoid products have effects more potent and dangerous than natural cannabis, and have been associated with dangerous adverse effects. The results of the current study were also supported by **Al Kury et al., (2019)** who studied the Effects of cannabinoid on cardiac exchanger. They stated that the use of cannabinoids have been associated with dangerous adverse effects on the central nervous system and cardiovascular system, including symptoms of bradycardia, tachycardia, hypotension, seizure.

The results of the current study suggested that severity level of anxiety in the synthetic cannabinoids group was greater compared to the severity level in the cannabinoids group as shown in **(figure 2)**. Anxiety symptoms that are associated with SC are more severe and gross than of cannabinoid in some cases they can even last for weeks following last use **(Cohen & Weinstein, 2018)**. The present study’s results revealed that the synthetic cannabinoids group had more moderate level of aggression than cannabinoids group as shown in **(figure2)**. These results were consistent with Norstrom & Rossow, (2016) who linked Cannabis use and violence and concluded that the consumption of cannabinoids is associated with an increase in violent behavior over the course of an individual’s lifespan. Regarding to depression symptoms, the results of the present study suggested that synthetic cannabinoids group had more severe level of depression than cannabinoids group as

shown in **(figure2)**. In the same line **Gabriella et al., (2019)** in a systematic review about “association of cannabis use in adolescence and risk of depression, anxiety, and suicidality in young adulthood “They reported that adolescent cannabis consumption was associated with increased risk of developing depression and suicidal behavior later in life.

Findings of the current study reported that there was a significant statistical relationship between demographic characteristics (patient’s age) and severity of physical symptoms in cannabinoids and synthetic cannabinoids groups and there was a significant statistical relationship between demographic characteristics (patient’s sex) and severity of physical symptoms in cannabinoids and synthetic cannabinoids groups as shown in **(Table 4)**. These results were supported by Baggio et al., (2017) who studied “Profiles of drug users in Switzerland and effects of early-onset intensive use of alcohol, tobacco and cannabis on other illicit drug use” and reported that there was a significant statistical relationship between patient’s age and severity of cardiovascular and respiratory symptoms in cannabinoids users.

Regarding to result of current study of Relationship between demographic characteristics (age, sex, occupation and residence) of the studied patients (both groups) and their total psychological symptoms there was no significant statistical relationship between patient's age, sex, occupation and residence and severity of psychological symptoms in cannabinoids and synthetic cannabinoids groups as shown in **(Table 5)**

Conclusion:

The present study finding concluded that:

The studied patients were had mild physical effect of cannabinoids and synthetic cannabinoids use. Cannabinoids group were had mild anxiety, aggression and moderate depression but synthetic cannabinoids group were had moderate anxiety, moderate aggression and mild depression. There was no significant relation between psychological

effects of cannabinoids and synthetic cannabinoids use and social health history of studied patients.

Recommendations:

Based on the results of this study, the following recommendations are suggested:

For nurses:

- Planning for psychosocial care program to provide psychosocial support for client with cannabinoids and synthetic cannabinoids substance abusers.
- Developing training program for addict patient about self-control skills.
- Purchasing national and international journals and make it free for staff members to encourage them to be aware of the new topics and trends related to substance use.

For researcher:

- Further study to examine the psychosocial problem among Cannabinoids and Synthetic Cannabinoids substance abusers.
- Further study to assess the long term physical and psychological effects among Cannabinoids and Synthetic Cannabinoids substance abusers.

For patient:

- Providing psycho educational program for patient about the risk of Cannabinoids and Synthetic Cannabinoids substance.

For community:

- Increase community awareness to risk of cannabinoids and synthetic cannabinoids via social media
- Establishment counseling program in schools for adolescent on cannabinoids and synthetic cannabinoids risk.

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