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ORIGINAL ARTICLE

A Clinical Study of Comorbidity Between Cannabis use Disorder with Some Psychiatric Disorders

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Background There is a wide range of unpleasant symptoms linked with cannabis use among those with a mental diagnosis or who are at risk of getting one.

Aims Determine patterns of cannabis use such as age of onset, dose, duration, frequency and motive for initiation of cannabis use, psychiatric comorbidity presents in subjects with cannabis use disorders and common risk factors for mental co-morbidity in subjects with cannabis use disorder.

Material and Methods This cross-sectional research enrolled 120 participants aged from 18 to 50 years old, meet the Diagnostic and Statistical Manual for Mental Disorders (DSM-5) criteria of Cannabis use disorder. Subjects were classified into two groups: subjects having comorbid axis I psychiatric disorder (G1; n= 76) and subjects without comorbid axis I psychiatric disorder (G2; n= 44).

Results There were statistically significant relationships between both groups regarding younger age, single marital status, the family history of alcohol abuse and the higher affection in psychological and social dimensions of Addiction Severity Index Scale, pattern of the use of cannabis (p <0.05).

Conclusions Individuals with cannabis use disorders are at greater risk for possessing a comorbid psychiatric use disorder, and conversely. Young age, being single, having low social class, illiteracy and affection of family, social, legal and psychiatric dimensions in addiction severity index scale were risk factors for comorbid psychiatric disorders.

Keywords Addiction severity Index, Cannabis use Disorder, Eysenck Personality Questionnaire, Psychiatric Disorders.

INTRODUCTION

Addiction psychiatry and general psychiatry must work together more closely in order to treat people with both drug misuse and mental health issues at the same time (Cramer *et al.,* 2010).

In principle, an approach that integrates psychosocial, pharmacologic, and psychotherapeutic interventions is optimal; nevertheless, very recently scientists have started emphasizing the neurobiological bases of comorbidity (Sirgiovanni, 2009).

Using cannabis is frequently connected with many outcomes especially psychiatric disorders outcome, However, there is scant evidence that this connection persists after controlling for confounding variables (Agrawal *et al.,* 2011).

The aim of this work was to determine patterns of cannabis use such as age of onset, dose, duration, frequency, and motive for initiation of cannabis use, psychiatric comorbidity presents in subjects with cannabis

use disorders and factors associated with psychiatric comorbidity in subjects with cannabis use disorder.

MATERIAL AND METHODS

This cross-sectional investigation was conducted on 120 patients aged from 18 to 50 years old, both sexes, conform to Diagnostic and Statistical Manual for Mental Disorders (DSM-5) criteria of cannabis use disorder. A written informed permission was obtained from the patient or their relatives. The study was done after approval from the Ethical Committee Tanta University Hospitals.

Settings and Design:

Centre of Psychiatry, Neurology and Neurosurgery, and psychiatric outpatient clinic of neuropsychiatry department, Tanta University. The study was a cross sectional study. Exclusion criteria were age below 18 years and above 50 years, serious concurrent physical sickness (e.g., heart, renal, hepatic diseases), history of neurological disorders as cerebrovascular diseases, parkinsonism, disseminated sclerosis as they have their own psychiatric symptoms, patients who refused to sign the consent and positive urine test for other illicit drugs.

Subjects were classified according to presence or absence of axis I mental illness into two groups: subjects having comorbid axis I psychiatric disorder (G1; *n*= 76) and subjects without comorbid axis I psychiatric disorder (G2; *n*= 44).

All patients were subjected to Semi structured interview sheet [items of this sheet were taken from sheet of institute of psychiatry, Ain Shams University Hospitals and from reviewing the literatures in the field of substance abuse. This sheet contains about 33 items. These items gather general data as well as the patients' drug habits (drug type, administration route, dosage, etc.).

Fahmy and El-Sherbini's Social Classification Scale (Fahmy and El-Sherbini, 1986): The instrument is a self-administered scale. Subjects were categorised into social class 1, 2, 3 and 4 according to the following criteria: **1.** Educational attainment of the father (score given is: 2, 4, 6, 8 and 10). **2.** Education and occupation of the mother (score given is: from 1 to 10) **3.** Income (score from 1 to 4). **4.** Crowding index (score from 0 to 3). **5.** Sanitation (score from 1 to 3).

Scoring:

The parameters result in a total score based on socioeconomic class: Total of 25-30 is a member of the elite social class 1, Score of 20-25 classed as middle social class 2, Score of 15-20 is regarded to be socially inferior 3, Score of 14 or lower carries an extremely low social status.

Patients were assessed by structured psychiatric interview:

This is done Using Mini International Neuropsychiatric Interview (MINI) (Sheehan *et al.,* 1998). Comparing MINI with Structured Clinical Interview for DSM-IV-R and the Composite International Diagnostic Interview (CIDI) has been the subject of validation and reliability studies (a structured interview developed by WHO for lay interviewers of for ICD-10). The Arabic version utilized in this study was validated by its use in other Egyptian studies (Ghanem *et al.,* 2009).

The Eysenck Personality Questionnaire (EPQ) (Eysenck and Eysenck, 1975):

It is one of the most applicable questionnaires used for assessment of personality. It was first published at 1964; a modified version of 91 questions was published later at 1975.

Arabic version of the EPQ was utilised (Eysenck and Abdel-Khalek, 1989). It is made up of 91 questions to which respondents answer with a yes or no. The instrument evaluates three personality dimensions; Psychoticism gauges an individual's degree of obstinacy, Extraversion quantifies a person's level of social connection with others, Neuroticism assesses an individual's emotional intensity and the Lie is a measurement of how truthfully a client answered the exam questions.

Eysenck and Abd El-Khalek, (1989) reported the means of personality traits for Egyptian samples, males 5.87; females 4.32 on 25 items. Psychoticism measure, males 12.42; females 12.10 on 20 items. Extraverted measure, males 12.79; females 14.32 on 23 items. Neuroticism measure and lastly on the Lie scale, males 12.74 and females 14.02.

This questionnaire's scales represent the dimensional approach; that is, they are not intended to diagnose clinical neurosis or psychosis, but rather to measure personality characteristics that underpin the development of neurotic or psychotic diseases.

Addiction severity Index (ASI) 5th edition (McLellan *et al.*, 1992):

It was developed to cover seven possible problem areas in patients with substance use disorder: employment, medical, drug/alcohol use, legal, family history, family/social relationships, and psychiatric condition. Each subscale consists of questions regarding the frequency, length, and severity of the patient's difficulties over his or her lifetime and the previous 30 days. Each section contains a mix of yes-no, multiple-choice, and free-response questions. Questions include objective markers of problem severity as well as the patient's subjective

evaluation of these issues. At the conclusion of assessment of each functional area, patients are asked to rate the degree to which they have been worried or bothered by these issues during the preceding 30 days as well as the extent to which they believe they require treatment in addition to any treatment they may be getting for this issue. This grade is based on a scale from 0 to 4. For each functional area, the interviewer additionally assigns a severity grade (ranging from 0 to 9) that represents the extent to which he or she believes the patient requires additional therapy as fellow: 0-1: no problem, 6-7: severe problem, 2-3: slight problem, 8-9: extreme problem, 4-5: moderate problem.

A urine screening for substances of abuse:

The patient's urine was screened for commonly abused substances (opiates, cannabis, benzodiazepines, barbiturates, cocaine, and amphetamines) to rule out the usage of additional illegal drugs. Urine samples were collected in sterile containers and analysed using a multidrug test with a single step. Immunochromatography was utilised for qualitative drug or metabolite identification in urine.

Statistical Analysis

IBM's SPSS version 19, Illinois, Chicago, USA (Statistical Package for Social Studies) was used to arrange, tabulate, and perform statistical analysis on the gathered data. There were both descriptive and comparative, where quantitative data were reported as mean and standard deviations and qualitative data as numbers and percentages. The Paired Student Test (*t*-test) was used to compare quantitative data from two groups. For qualitative data, the chi-square test (X^2) and Fisher exact test were used.

Differences were considered significant if the *P* value was 0.05 or less (Table 1).

RESULTS

There was no statistically significant difference between both groups as regard presence of comorbid personality disorders (Table 2).

Age of subjects with comorbid axis I disorders (27.11±5.71) was significantly lower than those without comorbid axis I disorders (30.95±7.74). There was no significant difference between both groups as regard sex, employment and social class (Tables 3 and 4). There was statistically difference between both groups (p <0.05) with subjects who had comorbid psychiatric disorder were more single than subjects without comorbid axis I psychiatric disorders who were more married. Subjects who had comorbid psychiatric disorder were slightly more illiterate than subjects without comorbid axis I psychiatric disorder but not statistically significant (p= 0.79). There was no statistically significant difference between both groups except family history of alcohol abuse were significantly more in subjects with no comorbid psychiatric disorders (Table 5).

Table 1: Socio-demographic data, family history, durations of cannabis use, dose (joint/day) and reason of initiation of the studied patients:

Sociodemograpic Data		Studied group (n= 120)
Sex	Male	113(94.17%)
	Female	7(5.83%)
Age in years		28.52±6.73
Religion	Muslim	112(93.3%)
	Christian	8(6.7%)
Education Level	Illiterate	42(35%)
	Read and write	15(12.5%)
	Secondary	12(10%)
	Technical	40(33.3%)
	University	11(9.17%)
Employment	Employed	54(45%)
	Unemployed	66(55%)
Marital status	Single	55(45.83%)
	Engaged	14(11.67%)
	Married	38(31.7%)
	Divorced	11(9.17%)
	Widow	2(1.7%)
Site of interview	Inpatient	68(54.7%)
	Outpatient	52(43.3%)
Social Class*	I –High	8(6.7%)
	II-Middle	38(31.7%)
	III-Low	46(38.3%)
	IV-Very low	28(23.3%)
Family history of studied subjects	Alcohol abuse	8(6.7%)
	Tobacco abuse	78(65%)
	Other substance abuse	29(24.17%)
	Legal problems	15(12.5%)
	Psychiatric disorders	12(10%)
	General medical disorders	16(13.4%)
Durations of cannabis use	1-4 years	26(21.7%)
	5-7 years	64(53.3%)
	>7 years	30(25%)
Dose (joint/day)	1-2	34(28.3%)
	3-4	57(47.5%)
	>=5	29(24.1%)
Reason of initiation	Peer influence	97(80.8%)
	Experimentation/curiosity	15(12.5%)
	Increase performance	6(11.7%)
	Other factors	14(11.7%)

Data are presented as mean±SD or frequency (%).

Table 2: Consequences of cannabis use and difference in prevalence of personality disorders in both groups:

0	frequency of overdose problems	frequency of legal problems	frequency of hospitalization	frequency of outpatient's treatment programmes
0	67(55.8%)	101(84.2%)	86(71.6%)	76(63.3%)
1-2 times	31(25.8%)	17(14.2%)	29(24.2%)	44(36.7%)
>2 times	22(18.3%)	2(1.7%)	5(4.2%)	
Personality disorders		**Group 1**	**Group 2**	***P* value**
Antisocial PD		9(11.8%)	2(4.8%)	0.182
Borderline PD		3(3.9%)	1(2.3%)	0.622
Dependent PD		2(2.6%)	0	0.278
Paranoid PD		2(2.6%)	1(2.3%)	0.903

Data are presented as frequency (%).

Table 3: Scores of Addiction Severity Index Scale in whole sample and mean scores of different personality parameters of Eysenck Personality questionnaire in cannabis users in comparison to normative values of Egyptian population:

	Medical	Employment	Drug abuse	Legal	Family history	Psychological	Social
No problem	99(82.5%)	39(32.5%)	0	101(84.2%)	67(55.8%)	12(10%)	17(14.2%)
Mild	13(10.8%)	26(21.7%)	30(25%)	0	14(11.7%)	27(22.5%)	30(25%)
Moderate	3(2.5%)	38(31.7%)	49(40.8%)	9(7.5%)	25(20.8%)	31(25.8%)	42(35%)
Severe	5(4.2%)	12(10%)	28(23.3%)	7(5.8%)	14(11.7%)	37(30.8%)	19(15.8%)
Extreme	0	5(4.2%)	13(10.8%)	3(2.5%)	0	13(10.8%)	12(10%)
Parameter			**Cannabis users**			**Normative value**	
Psychoticism			8.62±2.96			5.87±3.95	
Neuroticism			14.38±4.99			12.79±5.04	
Extraversion			12.16±4.25			12.42±4.71	
Lie			12.86±3.95			12.47±4.52	

Data are presented as frequency (%).

Table 4: Prevalence of psychiatric disorders among studied group:

Parameter		Studied group (*n*= 120)
Age of onset psychiatric disorders (years)		20.97±6.43
Comorbid axis I disorders	Present	76(63.3%)
	Absent	44(36.7%)
Order of onset of axis I co- morbidity	primary	20(26.3%)
	secondary	56(37.7%)
Prevalence of mood disorders	Present	57(47.5%)
	Absent	63(52.5%)
Prevalence of anxiety disorders	Present	69(57.5%)
	Absent	51(42.5%)
Prevalence of psychotic disorders	Present	23(19.17%)
	Absent	97(80.83%)
Prevalence of other disorders	Present	6(5%)
	Absent	114(95%)
Prevalence of co-morbid personality disorders	Present	19(15.8%)
	Absent	101(84.2%)

Data are presented as mean±SD or frequency (%).

There was statistically significant difference between both groups (p <0.05) with subjects with comorbid psychiatric disorders started using cannabis at younger age than subjects with no comorbid psychiatric disorders (Table 6). There was no statistically significant difference between both groups as regard duration of cannabis use disorder, form of cannabis used and frequency of hospitalization and outpatient's treatment. There was statistically significant difference between both groups (p <0.05) with subjects with comorbid psychiatric disorders consumed larger quantity of cannabis with mean of 5.4±2.5 joints /day in comparison to subjects with no comorbid psychiatric disorders (3.65±2.4 joints/day). There was statistically difference (p <0.05) between both groups with subjects with comorbid psychiatric disorders had more frequent use than subjects with no comorbid psychiatric disorders.

Severity in psychological and social dimensions in Addiction Severity Index Scale was significantly higher (p <0.05) among subjects with comorbid axis I than those without comorbid axis I. There was not statistically significant difference in other dimensions. Regarding

Eysenck Personality questionnaire, there was no statistically significant difference between both groups in the mean scores of the four parameters (Table 7).

DISCUSSION

Comorbidity between cannabis use and psychiatric disorders is difficult to estimate in clinical samples. Nevertheless, In the general population, epidemiological studies have demonstrated a correlation between cannabis use and certain psychiatric diseases. A growing worry is the incidence of cannabis usage among individuals with a widespread mental diagnosis. Nearly 47% of schizophrenia and 61% of bipolar patients report greater cannabis abuse rates than the general population. There is a spectrum of unpleasant symptoms commonly linked with cannabis use among those having a mental diagnosis or at risk for developing one (Lowe *et al.,* 2019).

In the present study, risk factors of dually diagnosed subjects with comorbid axis I disorders showed that younger age and single marital status were the main risk factors for comorbidity. There were insignificant relationships between both groups concerning other parameters in socio-demographic data.

Regarding significant relationship between dual diagnosis and young age subjects, this was consistent with Greenbaum *et al.,* (1996) and Crowley *et al.,* (1998) as in their clinical samples, it was estimated that 75% of adolescent SUD patients had a co-occurring condition. Also, was in agreement with Hickie and Walter, (2009) as they found that the leading causes of death and disability in this demographic were mental diseases and related substance addiction. These illnesses have a peak onset age in late adolescence and early adulthood, which corresponds to neurobiological and social changes in youth.

Regarding significant relationship between dual diagnosis and single subjects, this outcome was consistent with Mohamed *et al.,* (2013) as their main analysis suggested that significantly within adult mental health care, persons with comorbid mental health and drug addiction were more likely to be socially alienated (living alone). This may be related to a lack of secure relationships, which reflects a chaotic lifestyle caused by substance abuse and mental health issues.

Table 5: Difference in age, sex, employment, social class, marital status, education and family history between both groups:

		Group 1	Group 2	*P* value
Age in years		27.11±5.71	30.95±7.74	0.002*
Sex	Male	73(96.1%)	40(90.9%)	0.247
	Female	3(3.9%)	4(9.1%)	
Employment	Employed	35(46.1%)	19(43.2%)	0.761
	Unemployed	41(53.9%)	25(56.8%)	
Social class	High	5(6.6%)	3(9.1%)	0.761
	Middle	22(28.9%)	16(48%)	
	Low /very low	49(64.5%)	25(32.9%)	
Marital status	Single	43(56.6%)	12(27.3%)	0.009*
	Engaged	7(9.2%)	7(15.9%)	0.271
	Married	16(21.1%)	22(50%)	0.001*
	Divorced	9(11.8%)	2(4.5%)	0.182
	Widow	1(1.3%)	1(2.3%)	0.693
Education	Illiterate	29(38.2%)	13(29.5%)	0.790
	Read & write	10(13.2%)	5(11.4%)	
	Secondary	7(9.2%)	5(11.4%)	
	Technical	24(31.6%)	16(36.4%)	
	University	6(7.9%)	5911.4%)	
Family history	Substance abuse	18(23.7%)	11(25%)	0.871
	Alcohol abuse	2(2.6%)	6 (13.6%)	0.019*
	Legal problems	10(13.2%)	5(11.4%)	0.775
	Psychiatric disorders	6(7.9%)	6(13.6%)	0.312

Data are presented as mean±SD or frequency (%); *: Significant difference (p value <0.05).

Table 6: Difference in duration, Quantity (Mean dose (joint/day)), frequency of, forms of cannabis used, frequency of hospitalization and outpatient's treatment in both groups:

		Group 1	Group 2	*P* value
Age of onset		20.63±5.87	25.41±4.94	0.001*
Mean duration(years)		6.82±2.43	6.1±0.7.53	0.443
	1-4 years	20(26.3%)	17(38.6%)	0.159
	5-7 years	41(53.9%)	15(34.1%)	0.202
	>7 years	15(19.7%)	12(27.3%)	0.341
Mean dose (joint/day)		5.4±2.5	3.65±2.4	0.001*
	1-4 years	11(14.5%)	22(50%)	0.00*
	5-7 years	41(53.9%)	17(38.6%)	0.106
	>7 years	24(31.7%)	5(11.4%)	0.013*
Frequency of cannabis		42(55.3%)	10(43.2%)	0.001*
	Daily	42(55.3%)	10(43.2%)	0.001*
	Weekly	25(32.9%)	19(34.1%)	0.609
	Monthly	9(11.8%)	15(25%)	0.003*
	Hashish	43(56.5%)	26(59%)	0.789
Form of cannabis	Marijuana	8(10.5%)	6(13.6%)	0.609
	both	25(32.9%)	12(27.3%)	0.520
	0	50(65.8%)	36(81.8%)	
Frequency of hospitalization	1-2 time	22(28.9%)	7(15.9%)	0.169
	>2 times	4(2.3%)	1(2.3%)	
	0	46(60.5%)	30(68.2%)	
Frequency of outpatient's treatment program	one time	20(26.3%)	9(20.5%)	0.49
	two times	10(13.2%)	5(11.4%)	

Data are presented as mean±SD or frequency (%); *: Significant difference (*p* value <0.05).

Table 7: Difference in addiction severity according to addiction severity index scale in both groups:

		comorbid axis I (*n*= 76) (G1)	Non-Comorbid axis (*n*= 44) (G2)	*P* value
Dimensions of A.S.I. scale with severity>6	Medical status	2(2.6%)	3(6.8%)	0.269
	Legal status	4(5.3%)	6(13.6%)	0.109
	Employment	13(17.1%)	4(9.1%)	0.225
	Drug use	28(36.8%)	18(40.9%)	0.659
	Psychological status	46(60.5%)	9(20.5%)	0.001*
	Family history	9(11.8%)	5(11.4%)	0.937
	Social status	29(38.2%)	2(4.5%)	0.001*
Eysenck Personality questionnaire	Psychoticism	8.62±2.96	7.85±2.35	0.143
	Neuroticism	14.38±4.99	13.34±2.84	0.208
	Extraversion	12.16±4.25	13.56±3.41	0.065
	Lie	12.86±3.95	11.98±4.52	0.267

Data are presented as mean±SD or frequency (%); *: Significant difference (*p* value <0.05).

The mean onset age of cannabis consumption was statistically different (p= 0.001) between both groups with subjects having psychiatric comorbidity started cannabis use at younger age than subjects without psychiatric comorbidity. This was in agreement with Arias *et al.,* (2013) study as they found the age of initiation of cannabis consumption in subjects with comorbid psychiatric disorders was lower than subjects who didn't suffered from these psychiatric disorders (14.9 and 16.4 years respectively).

There was statistically difference between both group regarding the frequency of cannabis use and quantity of cannabis daily used. The majority of subjects with

psychiatric comorbidity (84%) had used more than three joints per day while most subjects without comorbidity had used less than three joints per day. Also, the percentage of daily cannabis users was more in subjects with psychiatric comorbidity.

This results was in agreement with previous studies such as Cuenca-Royo *et al.,* (2013) study who found that Heavier cannabis usage was connected not only with substance use disorders, but also with non-SUD and lighter cannabis use was reported by participants with no psychiatric problem. Psychiatric comorbidity was also associated with extensive cannabis usage in a sample of patients undergoing psychiatric treatment (Grella *et al.,* 2011).

Among 133 Italian conscripts (Troisi *et al.,* 1998), 83% with cannabis dependence, 46% of those with cannabis abuse, and 29% of occasional users had at least one DSM-III-R mental diagnostic.

Although it cannot be ruled out that the link may also be attributable to social, familial, and contextual factors, which raise the risks of heavy cannabis use (more joints and frequent use in this study) and the emergence of psychiatric problems, this theory cannot be ruled out.

There were no differences between the two groups in terms of sociodemographic data and cannabis use pattern.

Also, in the present study, regarding outcome and complications between groups, there were no statistically significant relationships between subjects with comorbid axis I and frequency of hospitalization and outpatient treatment program. This was in contrast with Bizzarri *et al.,* (2007) study in which as the dual diagnosis was associated with a significant total cost of treatment, which was primarily expanded utilization of outpatient psychiatric and abuse services. The additional expense may be due to a more severe disease severity in dual-diagnosed patients.

The significant relationship between dual diagnosis and severity in family and social dimensions in addiction severity index scale was in agreement with Goldstein and Levitt, (2008) study, this results was explained because the dual diagnosed subjects to treat their social problems were liable for abusing high doses to treat the presence of social problems.

Also, in agreement with results of the Drug Abuse Treatment Outcome Studies for Adolescents (DATOS-A; Grella *et al.,* 2001), a multisite review of drug treatment programmes for adolescents which revealed that those youth with comorbid disorders when compared to those without comorbid psychiatric disorders, were younger and had dedicated more illegal acts in the previous year (despite the absence of a difference in arrest rates), started using alcohol and marijuana earlier, their parents had greater drug issues. Additionally, comorbid youth reported more family issues and higher rates of past sexual or physical abuse. Lastly, their degrees of school devotion were lower (Grella *et al.,* 2001).

There was insignificant difference between both groups concerning the mean scores of Eysenck Personality questionnaire parameters and prevalence of personality disorders.

LIMITATIONS

The primary weakness is the cross-sectional design, which prevents the current study from drawing any causal inferences between cannabis usage and depression and comorbid psychiatric disorders.

CONCLUSION

Individuals with cannabis use disorders are at increased risk for having a comorbid psychiatric use disorder, and vice versa. Cannabis use is more prevalent among young and single people than in older and married groups. In our analysis, anxiety and mood disorders were the most prevalent mental conditions. Young age (less than twenty-five years old), being single, having low social class, illiteracy and affection of family, social, legal and psychiatric dimensions in addiction severity index scale were risk factors for comorbid psychiatric disorders. Psychiatric comorbidity was more common in subjects who started cannabis use at younger age and have higher frequency and quantity of cannabis.

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CONFLICT OF INTEREST

Nil.

REFERENCE

Agrawal A., Nurnberger JIJr., Lynskey MT. (2011). Cannabis involvement in individuals with bipolar disorder. Psychiatry Res 185:459–461.

Arias F., Szerman N., Vega P., Mesias B., Basurte I., Morant C., *et al.* (2013). Abuse or dependence on cannabis and other psychiatric disorders. Madrid study on dual pathology prevalence. Actas Esp Psiquiatr 41:122–129.

Bizzarri JV., Rucci P., Sbrana A., Gonnelli C., Massei GJ., Ravani L., *et al.* (2007). Reasons for substance use and vulnerability factors in patients with substance use disorder and anxiety or mood disorders. Addict Behav 32:384–391.

Cramer AO., Waldorp LJ., van der Maas HL., Borsboom D. (2010). Comorbidity: a network perspective. Behav Brain Sci 33:137–150. discussion 50-93.

Crowley TJ., Mikulich SK., MacDonald M., Young SE., Zerbe GO. (1998). Substance-dependent, conduct-disordered adolescent males: severity of diagnosis predicts 2-year outcome. Drug Alcohol Depend 49:225–237.

Cuenca-Royo AM., Torrens M., Sánchez-Niubó A., Suelves JM., Domingo-Salvany A. (2013). Psychiatric morbidity among young-adults cannabis users. Adicciones 25:45–53.

Eysenck HJ., Eysenck SBG. (1975). Manual of the Eysenck Personality Ques-tionnaire (junior and adult): Hodder and Stoughton Educational.

Eysenck SB., Abdel-Khalek AM. (1989). A cross-cultural study of personality: egyptian and english children. Int J. Psychol 24:1–11.

Fahmy M., El-Sherbini O. (1986). Determining simple parameters for social classification for health research. JHIPH 8:75–107.

Ghanem M., Gadallah M., Meky FA., Mourad S., El-Kholy G. (2009). National Survey of Prevalence of Mental Disorders in Egypt: preliminary survey. East Mediterr Health J. 15:65–75.

Goldstein BI., Levitt AJ. (2008). The specific burden of comorbid anxiety disorders and of substance use disorders in bipolar I disorder. Bipolar Disord 10:67–78.

Greenbaum PE., Foster-Johnson L., Petrila A. (1996). Co-occurring addictive and mental disorders among adolescents: prevalence research and future directions. Am J. Orthopsychiatry 66:52–60.

Grella CE., Hser YI., Joshi V., Rounds-Bryant J. (2001). Drug treatment outcomes for adolescents with comorbid mental and substance use disorders. J. Nerv Ment Dis 189:384–392.

Hickie I., Walter G. (2009). Adolescent Mental Health and Substance Misuse: The Major Health Challenge for Young Australians. Challenges in Adolescent Health: An Australian Perspective. XX: Nova Science Publishers p. 120–126.

Lowe DJE., Sasiadek JD., Coles AS., George TP. (2019). Cannabis and mental illness: a review. Eur Arch Psychiatry Clin Neurosci 269:107–120.

McLellan AT., Kushner H., Metzger D., Peters R., Smith I., Grissom G., *et al.* (1992). The Fifth Edition of the Addiction Severity Index. J. Subst Abuse Treat 9:199–213.

Mohamed N., Hammad S., El Hamrawy L., Rajab A., El Bahy M., Soltan M. (2013). Dual diagnosis and psychosocial correlates in substance abuse in Menoufia, Egypt. Menoufia Med J 26:114–121.

Sheehan DV., Lecrubier Y., Sheehan KH., Amorim P., Janavs J., Weiller E., *et al.* (1998). The Mini-International Neuropsychiatric Interview (M.I.N.I.): the development and validation of a structured diagnostic psychiatric interview for DSM-IV and ICD-10. J. Clin Psychiatry 59 (suppl 20):22–33. quiz 4–57.

Sirgiovanni E. (2009). The mechanistic approach to psychiatric classification. Dialogues Philosophy Ment Neurosci 2:150–156.

Troisi A., Pasini A., Saracco M., Spalletta G. (1998). Psychiatric symptoms in male cannabis users not using other illicit drugs. Addiction 93:487–492.