Psychiatric comorbidities in adolescents with substance-use disorder

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Introduction
Comorbidity between substance abuse and other psychiatric disorders has been excessively documented in adults while rarely been investigated in adolescents.
Aim
The study investigated the prevalence of psychiatric comorbidities among adolescent patients with substance-use disorder attending psychiatric health facilities in Suez Canal region.
Patients and methods
It was a cross-sectional study conducted on 120 adolescent patients aged 13–19 with substance-use disorder attending psychiatric health facilities in Suez Canal region. Data were collected using comprehensive psychiatric history, Mini-International Neuropsychiatric Interview, complete physical and neurological examination, and urine toxicology screen.
Results
Most of the study-sample participants were polysubstance abusers (89.1%). Cannabis was the commonest substance abused (90.8%). More than half of the patients (53.3%) had psychiatric comorbidity with onset before the abuse of the substance, 27.5% had psychiatric comorbidity after abusing the substance, and 19.2% had no psychiatric comorbidity. Major depressive disorder was the most prevalent disorder (40.8%) among the patients, followed by conduct disorder (38.3%).
Conclusion
Depression and conduct disorder are the most common psychiatric disorders among adolescent patients with substance-use disorder.

Keywords:
adolescents, psychiatric comorbidities, substance abuse

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Introduction

Adolescence is a vulnerable developmental stage where significant changes occur in youth bodies, brain, and environmental socialization, this may increase vulnerability to substance use and psychiatric comorbidity (Storr *et al.*, 2012).

Multiple studies have shown that the majority of adults who end up with substances and alcohol use have their first contact with these substances as adolescents (Leung *et al.*, 2014).

Alcohol and other substance-abuse disorders are common among adolescents, and have important public health consequences. The 20th century ended with the conviction that drug abuse was a global problem and thus global solutions were required (Negari Namaghi and Perry, 2019).

The onset of substance use, mental, and behavioral disturbance occurs for many reasons during the adolescent's years. Consequently, it is essential to understand the numerous factors that place adolescents at risk for alcohol and other drug use (Stone *et al.*, 2012).

Comorbidity between drug abuse and other psychiatric disorders has been excessively documented in adults while rarely had been investigated in adolescents Yakovenko and Hodgins (2018). The current study was aiming to investigate the prevalence of psychiatric comorbidities among adolescent patients with substance-use disorder attending psychiatric health facilities in Suez Canal region.

Patients and methods

Patients

This was a cross-sectional study to investigate the prevalence of psychiatric comorbidities among adolescent patients with substance-use disorder aged from 13 to 19 years attending Suez Canal University

Hospital, the psychiatry hospitals or clinics of Suez Canal regional area, and the related tertiary centers of the Ministry of Health. It was conducted on 120 adolescent patients. This study is approved by ethical committee in Faculty of medicine Suez Canal University. Patients were diagnosed as having substance-use disorders according to the criteria of the International Classification of Diseases-10. Patients who were selected were at least 1 year using substance for one or more illicit drugs. Permissions for the study were obtained from the authorities (parents) that were concerned, and patients and their guardians were informed about the purpose of the study, and consent from the patient's legal guardian was signed before the beginning of this study.

Exclusion criteria

Patients with intellectual disability, patients with epilepsy, severe head trauma and neurologic deficits, patients with sensory defects, such as hearing or visual defect, and patients with severe psychotic symptoms or with severe disorganized behavior (as these could affect cooperation of patients).

Methods

Sample size was calculated with power as 80% and level of significance at 0.05 based on a previously published study (Birhanu *et al.*, 2014) patients (n=120).

The study was conducted using two questionnaires. The first one full comprehensive psychiatric sheet, including sociodemographic data such as age, sex, residency, religion, and educational level, membership in sport clubs, hobbies, interests, values, and friendships. It was tested for validity by pilot study on 10 patients before starting the current study.

The second one structured psychiatric interview using The Mini-International Neuropsychiatric Interview v.5 developed by Sheehan *et al.* (1998)(Sheehan *et al.*, 2017). For the study, we used the Arabic translation developed by Okasha *et al.* (1999).

The Mini-International Neuropsychiatric Interview v.5 was designed as a brief structured interview for the major axis-I psychiatric disorders in DSM-IV and International Classification of Diseases-10, including major depressive disorder, dysthymia, generalized anxiety disorder, manic or hypomanic episode, panic disorders, social phobia, agoraphobia, obsessive–compulsive disorder, posttraumatic stress disorder, substance-use disorder, eating disorders, and oppositional-defiant disorder.

Validation and reliability studies have been done and the score was highly acceptable. It takes about 15 min to complete the test.

In addition to interviews, complete physical and neurological examination to exclude neurological or organic comorbidities and urine toxicology screen before detoxification and just before interviewing the patients if he/she is an outpatient client were done.

Statistical analysis

Statistical analysis was performed using using SPSS (Statistical Package for Social Sciences; SPSS Inc., Chicago, Illinois, USA), version 17. Numerical values were expressed as mean±SD. Qualitative data were summarized as numbers and percentages. χ^2 test was used to compare categorical variables between groups. P value of 0.05 or less was considered statistically significant.

Results

Most of the patients show positive family history of substance abuse, mental disorder, or both (Tables 1–3).

Cannabis-use disorder and alcohol-use disorder respectively having represented 90.8 and 79.2%. Most of the patients are polysubstance abuse (89.1%) (Fig. 1 and Table 4).

Table 1 Baseline characteristics (*N*=120)

Variables	*n* (%)
Age (years) (mean±SD)	17.59±1.293
Sex	
Male	112 (93.3)
Female	8 (6.7)
Marital status	
Unmarried	117 (97.5)
Married	3 (2.5)
Residency	
Urban	98 (81.7)
Rural	22 (18.3)
Occupation	
Unemployed student	8 (6.7)
Student	17 (14.2)
Working student	72 (60)
Technician	23 (19.2)
Hobbies	
No hobbies	116 (96.7)
Smoking	
Smoker	120 (100)
Family history of substance-use disorder (SUD)	
Positive family history	67 (55.8)
Family history of mental health disease (MHD)	
Positive family history	88 (73.3)
Family history of both SUD+MHD	
Positive family history	59 (49.2)

Major depressive disorder was the most prevalent disorder (40.8%) among the patients, followed by conduct disorder (38.3%) (Table 5 and Fig. 2).

Patients with positive family history of mental health disease are more likely to develop psychiatric comorbidity (P=0.001) (Tables 6 and 7).

Discussion

Our study sample revealed that cannabis-use disorder, alcohol, and opioid-use disorder respectively represent 90.8, 79.2, and 52%, respectively. Hallucinogens and stimulants were the least prevalent but both present (3.3%). These results are in agreement with WHO 2014 reports Organization and Organization (2014). Our results were not matching with Negm and Fouad (2014), who found that tramadol, cannabis, and alcohol were the most commonly abused substances among adolescent school students in Zagazig (83.3, 27.8, and 16.7%, respectively) (Negm and Fouad, 2014). This variation may be different in sampling in both studies as in Zagazig study, all samples were school students or could be changed in preference of abused drugs.

The patients in the current study were using polysubstance than monosubstance from 1 to 6 substances with an average of 3. These results came alongside with a study done by El-Awady *et al.* (2017)

Table 2 Socioeconomic scale among the study group (N=120)

SES categories	*n* (%)
High	8 (6.7)
Intermediate	39 (32.5)
Low	64 (53.3)
Very low	9 (7.5)

More than half of the patients (53.3%) have low socioeconomic status.

Table 3 Pattern and frequency of different substance-use disorders among the study groups

Variables	*n* (%)
Mono–SUD	13 (10.8)
Poly–SUD	107 (89.1)
Types of substances	
Cannabis-use disorder	109 (90.8)
Alcohol-use disorder	95 (79.2)
Opioids-use disorder	66 (55)
Stimulants-use disorder	4 (3.3)
Medication	43 (35.8)
Benzodiazepine	44 (36.7)
Hallucinogens	4 (3.3)
Inhalants	7 (5.8)

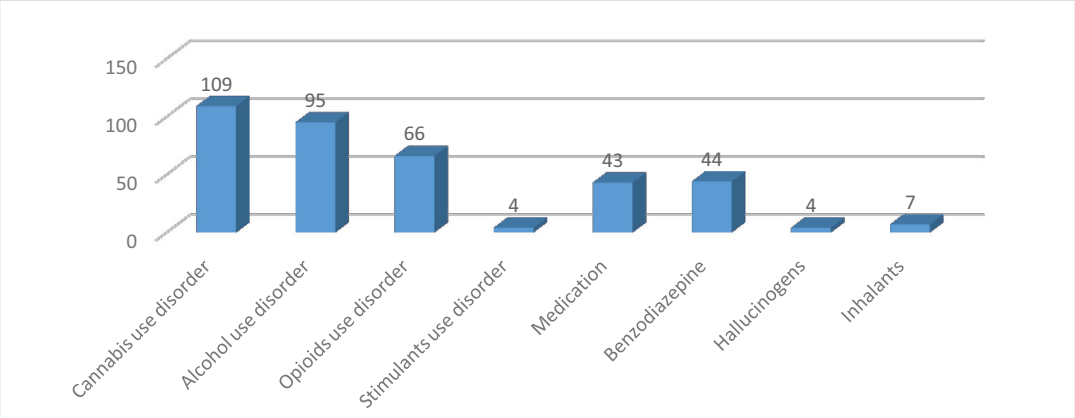
SUD, substance-use disorder.

Table 4 Psychiatric comorbidities in the study group (N=120)

	Frequency	%
Psychiatric comorbidity		
No comorbidity	23	19.2
Comorbidity after SUD	33	27.5
Comorbidity before SUD	64	53.3
Frequency of psychiatric disorders among study population		
Major depressive disorder	49	40.8
Posttraumatic stress disorder	6	5.0
Suicidal tendency	13	10.8
Specific phobia	5	4.2
Dysthymia	5	4.2
Panic disorder	3	2.5
Anorexia nervosa	3	2.5
Separation anxiety disorder	3	2.5
Tic disorder	2	1.7
Psychotic disorder	24	20.0
Mania or hypomania	13	10.8
Generalized anxiety disorder	27	22.5
Adjustment disorder	3	2.5
Attention deficit hyperactivity disorder	16	13.3
Oppositional defiant disorder	9	7.5
Conduct disorder	46	38.3

SUD, substance-use disorder.

Figure 1



Frequency of substance abuse between the studied sample.

Table 5 Comparison between comorbid versus noncomorbid as regard substance of use

	Comorbidity			
	Not comorbid	Comorbid	Total	*P* value
Cannabis-use disorder				
Negative	3	8	11	0.474
Positive	20	89	109	
Alcohol-use disorder				
Negative	6	19	25	0.490
Positive	17	78	95	
Opioids-use disorder				
Negative	11	43	54	0.762
Positive	12	54	66	
Stimulants-use disorder				
Negative	22	94	116	0.763
Positive	1	3	4	
Medication				
Negative	14	63	77	0.714
Positive	9	34	43	
Benzodiazepine				
Negative	16	60	76	0.490
Positive	7	37	44	
Hallucinogens				
Negative	22	94	116	0.763
Positive	1	3	4	
Inhalants				
Negative	22	91	113	0.735
Positive	1	6	7	

Values are based on χ^2 test. Statistical significance at *P* value less than 0.05.

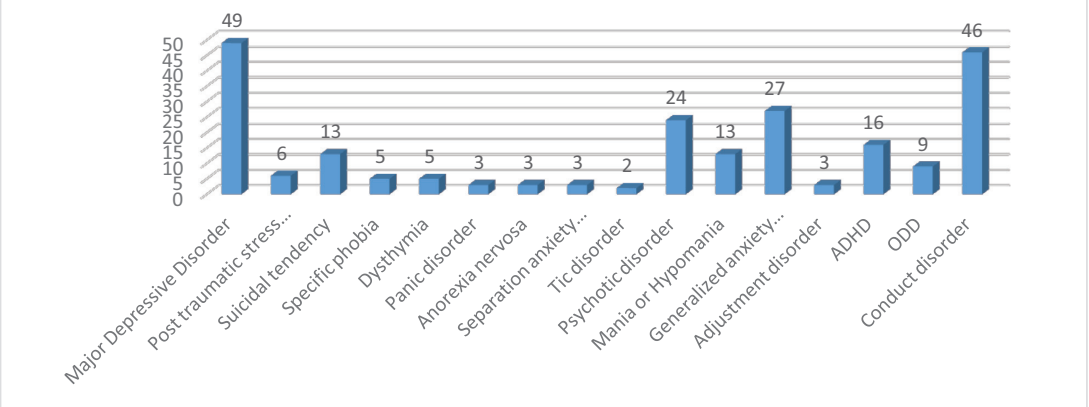
in Mansoura, which revealed that polysubstance use is much prevalent.

In Egypt, substance-use disorders are prevalent and commonly associated with mental disorders, limited data for this association are available from low-income and middle-income countries. The most prevalent psychiatric disorders in our samples were depression and conduct disorder that go alongside with Deas and Brown (2006), in their study about psychiatry comorbidity among adolescents with substance-use disorder, the explanation could be as patients need abusing substance as the type of self-medication from depression or as the type of impulsivity in patients with conduct disorder.

In India, major depressive disorder, psychosis, bipolar mood disorder, attention-deficit hyperactivity disorder, and anxiety disorders are common comorbidities in adolescent patients with substance-use disorder (Shantna *et al.*, 2009).

However, social phobia, agoraphobia, obsessive–compulsive disorder, and bulimia nervosa did not occur among the study sample. This could be explained by Myrick and Brady (2003), in their survey in South Carolina, which revealed that these disorders are falsely less represented among substance

Figure 2



Psychiatric comorbidities in the studied group.

Table 6 Comparison between patients' employment status and comorbidity

	SUD before MHD	Not comorbid	SUD after MHD	*P* value
Occupation				
Unemployed	2	2	5	0.05*
Student	1	6	11	
Working student	21	12	68	
Technician	9	3	25	

Values are based on χ^2 test. MHD, mental health disease; SUD, substance-use disorder. Working students showed the highest count of patients who developed comorbidity (*P*=0.05). Statistical significance at *P* value less than 0.05. *Statistically significant.

Table 7 Comparison between family history and comorbidity

	SUD before MHD	Not comorbid	SUD after MHD	*P* value
Family history of mental health disease				
Positive family history	3	16	23	0.001*
Negative family history	30	7	41	

Values are based on χ^2 test. MHD, mental health disease; SUD, substance-use disorder. Statistical significance at *P* value less than 0.05
*Statistically significant.

drug-abuse patients while they are common, because they are often unrecognized and/or trivialized as just 'shyness' (Myrick and Brady, 2003).

There is a reported temporal relationship between psychiatric disorder and substance-use disorder among the comorbid groups (53.3%) that had psychiatric disorder before substance-use disorder, furthermore, 27.5% of the study sample had the psychiatric disorder with onset after using substance. This temporality goes along with Saban *et al.* (2014) and Chiu *et al.* (2018), in their study about the temporal relationship between mental health disease and substance-use disorder, this can be explained by using substance abuse as self-medication in depressed adolescents and as type of impulsivity in conduct disorder.

About 60% of the study sample were working students (unstable employment) and those patients were more likely to develop psychiatric comorbidity (*P*=0.05), this is in agreement with the results of a large study done by Dhawan *et al*. (2017) about the pattern and profile of children and adolescents using substances in India, which found that 50% of the users were employed and their employment characterized by instability. This could be due to more social and financial stressors in these groups of patients (Dhawan *et al*., 2017).

Among the study sample, 73.3% of the study sample showed a positive family history of a psychiatric disorder. Those who had a positive family history of psychiatric disorder were more likely to develop psychiatric comorbidity (*P*=0.001), this goes alongside with Morean *et al*. (2009), Wilson *et al*. (2013), and Robinson and Adinoff (2016). In contrast to a study done by Comtois *et al*. (2005), they found that positive family history of substance use only was related to the development and severity of substance-related consequences like comorbidity, this difference may be related to different age group of this sample that was 14–25 years old and consequently longer duration of substance use.

Conclusion

From the current study, it was concluded that the substance-use disorders are a major health problem among adolescents. Moreover, it is more prevalent in male sex in Egyptian population. Polysubstance, cannabis, and alcohol dependency are at the top of all substances abused and major depressive disorder, conduct disorder, ADHD, ODD, and anxiety disorders are the most prevalent in Egypt.

It is hard to detect the causality between the substance-use disorder and mental health disorders and this refers to the multifactorial reasons of both disorders, which up till now, are not clear.

Recommendations

It is much important to counsel children and adolescents with a psychiatric illness and their parents about the increased risk for substance-use disorder before transitions to adolescence. Discussions and health education about substance abuse should begin during the fifth grade because data suggest that adolescent substance use often starts (6th–9th grade).

Future research with larger samples, a long follow-up, and data collection on parent involvement and substance use can provide further insights on how sociodemographic factors influence substance use among at-risk adolescents, and developing comorbidities, which could lead to enhancements to treatment for this population.

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Conflicts of interest

There are no conflicts of interest.

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