Sociodemographic and substance characteristics among adolescents with psychotic disorders

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Background
Over the preceding time, there is a significant bidirectional relationship between substance use and the development of psychiatric disorders during the adolescent stage. The comorbidity of substance use among adolescents with mental disorders is a major challengeable public health concern. This study examined the sociodemographic correlates and substance-use patterns among adolescents with psychotic disorders versus nonpsychotic psychiatric disorders (controls).
Patients and methods
This is a case–control study on 76 adolescents diagnosed with different psychotic disorders and another group of 76 adolescents with nonpsychotic psychiatric disorders using Mini-Plus International Neuropsychiatric Interview (MINI), Positive And Negative Syndrome Scale, and Alcohol, Smoking, Substance Involvement Screening Test and urine test.
Results
Substantial sociodemographic differences were found among the adolescents with psychotic disorders (case) (72.4% nonemployed, 71.1% rural areas, and 2.6% governmental healthcare services) compared with controls (60.5% nonemployed, 39.5% rural areas, and 28.9% governmental healthcare services), also, there was a significant difference in substance-use pattern among cases (lifelong use of tobacco 81.6%, cannabis 80.3%, and opioids 90.8%, with more substance-related problems) compared with controls (lifelong use of tobacco 61.8%, cannabis 55.3%, and opioids 73.7%, with less substance-related problems).
Conclusion
The sociodemographic variables related to rural residence, nonemployment, less approach to governmental health service, and positive family history of psychiatric disorders were the major contributing factors for psychotic disorders in adolescents with substance use. The lifetime use of cannabis and opioids was the major risk of developing psychosis among adolescents.

Keywords:
adolescent, comorbidity, psychiatric disorders, psychotic, sociodemographic, substance use

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Introduction

The WHO defines adolescence as the period of life between the age of 10 and 19 years old, which is considered a formative period associated with fast-growing biological, psychosocial evolutions, which increases their tendency to mental health problems related to any other age group (WHO, World Drug Report, 2018). Nowadays, the adolescents are transient through adulthood in a situation that is very diverse from their parents. Their evolution to adulthood is deeply affected by huge sociopolitical, violent, economic challenges, the availability of illicit substances, and the underestimation of the mental disorders facing them today (Liu *et al.*, 2017).

The global estimates from World Health Organization (2019) report 10? 20% of children and adolescents will encounter a mental illness before adulthood. One in four individuals will be subjected to mental health dilemmas during their lifetime, yet two-thirds of this unit will not obtain mental healthcare.

Earlier admission of substance use in adolescence is linked not just with substance-use disorder (SUDs) but also with antisocial behavior and maladaptive functioning, including legal and relationship troubles, incarceration, educational failure, unemployment, and mental health issues (Nock *et al.*, 2017).

Substance use is globally widespread and persists in an enduring health crisis influencing every part of the world. In 2016, the United Nations Office on Drugs and Crime (UNODC) anticipated that 275 million people aged

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15–64 used drugs at least once (United Nations Office on Drugs and Crime UNODC, 2021). Substance use affected nearly 20 million disability-adjusted life years and 8.6 million years of life lost across nations. Substance use may also generate the underlying long-term disorder. This explains why cannabis-use adolescents can accelerate the progress of a psychosis that runs separately as another distinct illness (Radhakrishnan *et al.*, 2014).Psychiatric disorders may raise the risk of substantial and unrestrained use of substances, leading to the development of a SUD that may remain even when the underlying psychiatric condition is appropriately treated or remits (Mestre-Pinto *et al.*, 2015). In comparison with patients with a single disorder, patients diagnosed with comorbid conditions show a higher psychopathological impairment, significantly increased rates of psychiatric admissions, higher prevalence of suicide, and more emergent conditions (Schmoll *et al.*, 2015).

A large cohort study done in Egypt involved 10 648 secondary school students who concluded that cigarette smoking was the highest comprising 9%, 5.1% were using benzodiazepines, 3.3% to alcohol, organic solvents were 3.1%, and cannabis revealed 2.6% for the past 12 months. The dependence was 0.9% with exclusion to nicotine dependence. Males were all superior independence, regular use, and intake (Rabie *et al.*, 2020).

Dual diagnosis of SUD and a psychiatric disorder is enormously prevalent (Kelly and Daley, 2013). Globally, 45% of individuals with psychiatric conditions have been quantified to acquire two or added disorders, and 27% of people have at minimum one psychiatric disorder. Comorbidity has been noted between SUDs and numerous psychiatric diagnoses, involving anxiety, depression, psychotic, and bipolar disorders, nevertheless antisocial personality disorders (Kessler *et al.*, 2005).

Furthermore, a robust link has been observed between cannabis use and social anxiety disorder; significantly, mutually cannabis use and social phobia frequently start during youth (Kelly and Daley, 2013). Numerous surveys have revealed that attention-deficit hyperactivity disorder (ADHD) among children and adolescents displays greater comorbidity of SUDs (nicotine) than similar individuals without ADHD (Lee *et al.*, 2011; Van Emmerik-van Oortmerssen *et al.*, 2014). Findings have demonstrated that this enhanced possibility of comorbidity with personality, anxiety, and mood disorders persists to be detected yet when people are separately evaluated for SUDs and ADHD (Arias *et al.*, 2008).

This study aims to demonstrate the sociodemographic and clinical correlates of psychotic disorders in adolescents through comparing sociodemographic, clinical, and substance-use presentations between adolescents with psychotic disorders and a control group of adolescents with nonpsychotic disorders.

Patients and methods

A case–control observational study was conducted in Mansoura University Psychiatric Hospital (inpatient wards and outpatient clinics) over 1 year from November 2018 to November 2019. The sample size was calculated using DSSresearch.com: sample-size calculator at α error 5% (95% confidence) and 20% β error (80% potent the study). Assuming the prevalence of cannabis use is 55.56% among adolescents with psychotic disorders and 35.56% among adolescents with nonpsychotic psychiatric illnesses (Paruk *et al.*, 2018). The calculated sample size is 76 patients in each group. This study was approved by the IRB of Faculty of Medicine, Mansoura University Code Number: MS.18.09.228. Written informed consent was obtained from participants before the admission after explaining the purpose of the study.

The study was conducted on a case/control sample (survivor sampling) of two groups of patients. The first group consisted of 76 patients with psychotic that is comorbid with substance use. While the second group of 76 patients with nonpsychotic psychiatric illnesses comorbid with substance use. Both groups are of matched age and sex and nationality. Inclusion criteria for cases were as follows: (a) age: 10–19 years old, (b) sex: males and females, (c) patient with psychotic disorder: schizophrenia, schizoaffective disorder, schizophreniform disorder, brief psychotic disorder, and psychiatric disorders with psychotic features, and (4) patient with substance use. The exclusion criteria were as follows: (a) who refuses to share or does not complete the study, (b) organic causes of psychiatric illness, (c) intellectual disability, and (d) in a state of intoxication or unconsciousness. The control group was a group of nonpsychotic psychiatric illnesses with comorbid substance use that matched with age and sex.

Participants were subjected to the following:

(1) Sociodemographic data characteristics among studied groups (age, sex, educational level, sex, employment, marital status, primary caregiver, residence, and main healthcare domain) using socioeconomic scale for Egyptian health research (El-Gilany*et al.*, 2012).

(2) Complete medical and neurological history and examination.
(3) Short structured clinical interview using Mini-Plus International Neuropsychiatric Interview (MINI). (Sheehan*et al.*, 1998). MINI was created for the major Axis I psychiatric disorders in DSM IV and ICD 10. The Arabic version of the MINI-Plus instrument for the diagnosis of mental health disorders was used during this study (Ghanem*et al.*, 1998).
(4) Assessment of dimensions and severity of positive, negative symptoms, and associated psychopathology using Positive And Negative Syndrome Scale (PANSS) (Kay*et al.*, 1987). The scale is a 30-item rating scale divided over three scales: positive (seven items), negative (seven items), and general psychopathology (16 items). The potential ranges are 7–49 for the Positive and Negative Scales and 16–112 for the General Psychopathology Scale. The validated Arabic version was used in that study (Yehya*et al.*, 2016).
(5) Screen lifetime use and current substance use and associated problems of alcohol and substances using Alcohol, Smoking and Substance Involvement Screening Test (ASSIST), version 3 (WHO, 2003). The ASSIST (version 3) is an eight-item questionnaire shaped to be fixed by a clinician to a client over 5–10 min. The Arabic version of ASSIST, version 3.1 was used in our study (Muhamad*et al.*, 2018).
(6) Functional impairment over three interdomains (work/school, social, and family life) was assessed by using Sheehan Disability Scale (Sheehan, 1983). The three domains can be gathered into a single score of global functional impairment ranges from 0 to 30. There is no suggested cutoff score. Patients who score 5 or more on any of the three scales are of clinical significance with impairment.
(7) Urine drug screen: 20 ml of urine were gathered from all participants in clean, dry, sterilized, and labeled containers without preservatives.

Statistical analysis

Statistics are implied, managed, and analyzed using SPSS, version 16 (IBM Corporation, Chicago, Illinois, USA). Categorical data were introduced as number and percentage. Continuous data were defined as median and range (minimum and maximum). χ^2 test was used to test the significance of qualitative data. Monte Carlo was used to compare qualitative data in more than 4-cell table. Mann–Whitney was applied to compare continuous data between two groups, while the Kruskal–Wallis test was used to compare non-normally distributed data between more than two groups. The crude odds ratio was calculated using the Epi-info (Centers for Disease Control and Prevention (CDC), Atlanta, Georgia, US) program with a 95% confidence interval. Logistic-regression analysis was performed on significant variables in bivariate analysis. Adjusted odds ratios with 95% confidence interval were calculated. *P* value less than or equal to 0.05 was considered statistically significant.

Results

Table 1 shows the sociodemographic variables of the study participants. They differ in age; in the psychosis, the group's mean age was 17.06±1.6, while in the other group was 17.07±1.4, but shows no statistically significant difference (P=0.9). While the statistically significant differences were in residence as rural adolescents were more liable to be diagnosed with psychosis than another group with *P* value less than 0.001, and in the adolescents with governmental hospitals as the main health domain was considered also statistically significant with *P* value less than 0.001.

Regarding the family history of substance and mental illness, positive psychiatric history is predominant (48 vs. 38) among the psychotic group, but there is a high proportion in positive substance (46 vs. 44) use in the nonpsychotic group, although in this finding, there is no significant difference among both groups.

Table 2 shows MINI-plus scale assessment of psychosis-group adolescents. As shown in the table, the most common diagnosis among this group is schizophrenia spectrum and other psychotic disorders by 68.4%, which is subclassed into schizophrenia (55.3%), schizoaffective disorder (6.6%), schizophreniform disorder (5.3%), and brief psychotic disorder (1.3%). The following main diagnosis is bipolar mood disorder with psychotic features (31.6%). Mood disorders were the most prevalent illnesses by 27.5% divided into two main diagnoses (depression, 19%) and bipolar mood disorder without psychotic features (2.6%), followed by conduct disorder that represents 17.1%, personality disorders (15.8%), obsessive–compulsive disorder (13.2), anxiety disorders that are generally represented (11.9%) but subdivided into generalized anxiety disorder (5.3%) with the same percentage with panic disorder (5.3%), while social phobia was only 1.3, ADHD (7.9), trauma and stressor-related disorders were 5.2% in the form of posttraumatic stress disorder (3.9) and adjustment disorder (1.3), and finally eating disorder manifested as anorexia nervosa (1.3%). The results of the

Table 1 Sociodemographic characteristics among studied groups

Sociodemographic variables	Psychosis group (*N*=76)			COR (95% CI)
	n (%)	Other disorders group (*N*=76)	*P* value	
Age	17.06±1.6	17.07±1.4	0.9	NA
Sex				
Male	51 (67.1)	49 (64.5)	0.7	1.1 (0.6–2.2)
Female	25 (32.9)	27 (35.5)	1r	1r
Education level				
Presecondary	14 (18.4)	15 (19.7)	1r	1r
Secondary	38 (50)	25 (32.9)	0.3	1.6 (0.7–3.9)
Postsecondary	24 (31.6)	36 (47.4)	0.5	0.7 (0.2–1.7)
Employment status				
Nonworking	55 (72.4)	46 (60.5)	0.03	2.9 (1.1–8.3)
Manual worker/farmer	15 (19.7)	15 (19.7)	0.1	2.5 (0.7–8.2)
Semiprofessional/professional	6 (7.9)	15 (19.7)	1r	1r
Primary caregiver				
Parents	50 (65.8)	48 (63.2)	0.8	1.2 (0.4–3.5)
Single parent	19 (25)	20 (26.3)	0.9	1.1 (0.3–3.6)
Other	7 (9.2)	8 (10.8)	1r	1r
Residence				
Rural	54 (71.1)	30 (39.5)	≤0.001	3.8 (1.9–7.4)
Urban	22 (28.9)	46 (60.5)	1r	1r
Socioeconomic level				
Very low/low	15 (19.7)	16 (21.1)	0.5	1.3 (0.5–3.6)
Middle	49 (64.5)	43 (56.6)	0.3	1.6 (0.7–3.7)
High	12 (15.8)	17 (22.4)	1r	1r
Marital status				
Single	72 (94.7)	74 (97.4)	0.4	0.5 (0.1–2.7)
Married	4 (5.3)	2 (2.6)	1r	1r
Main health care domain				
Traditional healer	8 (10.5)	6 (7.9)	1r	1r
Governmental	2 (2.6)	22 (28.9)	≤0.001	0.06 (0.01–0.4)
Private	17 (22.4)	23 (30.3)	0.3	0.5 (0.2–1.9)
More than one	49 (64.5)	25 (32.9)	0.5	1.5 (0.5–4.7)

Data are presented as number and percentage or mean±SD. CI, confidence interval; COR, crude odds ratio; r, reference group. *P* value is significant if less than or equal to 0.05.

PANSS score for the psychotic group show a predominance of PANSS positive score (34), while the general psychopathology score of PANSS (62.5 vs. 51.5) is highly predominant over nonpsychotic manifestations.

Table 3 shows the pattern of substance use among both groups using the ASSIST scale. ASSIST reveals that there is a significant difference in substance use among both groups as lifetime tobacco use (82.6%), cannabis use (80.3%), and opioid use (90.8%) is more prevalent and more predictors for the occurrence of comorbid psychosis more than other psychiatric illness, while ASSIST reveals that the predominant current use of tobacco (68.4%), cannabis (60.5%), sedatives (34.2%), and the other substances (15.8%) among the psychosis group while the use of alcohol (25%) and opioids (73.7%) is more prevalent among the other group but with no significant difference between the groups.

There are statistically significant differences in ASSIST scale scores of the urge of use, failure to cut down the substances, and frequency of health, social, legal, or financial problems, among psychotic adolescent group versus the nonpsychotic group.

Table 4 displays the use of the Sheehan Disability scale in determining the level of deterioration in function at the three main levels of daily life (work/study, social life, and home responsibility). As shown in the table, there is a major significant difference between the two groups in all items of the scale that appears as more deterioration in functioning and performance level in all aspects of daily level, which varies from severe to extreme deterioration. The deterioration level at work (52.6%) and social life (53.6%) is mainly severe with a *P* value of less than or equal to 0.001, while in-home responsibilities (47.4%) show extreme deterioration with a *P* value of less than or equal to 0.001.

Table 5 shows that adolescents who live in a rural area, out of reach to governmental hospitals, with lifetime use of cannabis and/or lifetime use of opioids, have a significant risk factor for comorbid psychotic disorders more than other mental illnesses by logistic-regression analysis (adjusted odds ratio=4.1, 0.7, 3.2, and 3.9, respectively).

Table 2 Diagnostic characteristics among studied groups: case

Psychotic group (*N*=76)	*n* (%)
Schizophrenia spectrum and other psychotic disorders	52 (68.4)
Schizophrenia	42 (55.3)
Schizoaffective disorder	5 (6.6)
Schizophreniform disorder	4 (5.3)
Brief psychotic disorder	1 (1.3)
Bipolar mood disorder with psychotic features	24 (31.6)
Nonpsychotic group (*N*=76)	*n* (%)
Mood disorders	21 (27.5)
Depression	19 (25)
Bipolar mood disorder without psychotic features	2 (2.6)
Conduct disorder	13 (17.1)
Personality disorder	12 (15.8)
Obsessive–compulsive disorder	10 (13.2)
Anxiety disorders	9 (11.9)
Generalized anxiety disorder	4 (5.3)
Panic disorder	4 (5.3)
Social phobia	1 (1.3)
Attention-deficit hyperactivity disorder	6 (7.9)
Trauma and stressor-related disorders	4 (5.2)
Posttraumatic stress disorder	3 (3.9)
Adjustment disorder	1 (1.3)
Anorexia nervosa	1 (1.3)

Data are presented as *n* (%.

Discussion

Mental illnesses and substance use are highly predominant disorders that often co-occur. In this study, we were comparing the sociodemographic, substance-use forms, as well as the extent of psychiatric diagnoses, and the level of deterioration of functions among adolescents with psychotic and nonpsychotic disorders.

In our study, most of the participants were elder adolescents (17–19 years old), where the mean ages were 17.06±1.6 and 17.07±1.4 among case and control groups, respectively, with no significant difference among both groups. This is consistent with the following studies conducted by Ogbonna *et al.* (2020), Conway *et al.* (2016); Hutchison (2017), and Shaarawy *et al.* (2019). This is in contrast with the results done by Paruk *et al.* (2018) (15.9±1.8), Essau and de la Torre-Luque (2019) (15.3±1.9), and Gattamorta *et al.* (2017) (15.95±1.06) (Herz *et al.*, 2018) (14.4±1.39). The variability of the mean age reflects the widespread problem of psychiatric comorbidity among all age groups.

The male sex predominates the studied sample representing 67.1 and 64.5%, with a male : female ratio of 2 : 1 and 1.8 : 1 among the case and control groups, respectively, this was also a consistent finding with previous literature showing 69 and 64% male representation (Paruk *et al.*, 2018), in addition, the male predominance was also found as a general rule in many studies such as Hapangama *et al.* (2013);

Table 3 Substance use pattern of the sample

Parameters	Psychotic group (*N*=76)	Other disorders group (*N*=76)	*P* value
	n (%)		
Lifetime substance use			
Tobacco	62 (81.6)	47 (61.8)	0.007
Alcohol	28 (36.8)	19 (25)	0.1
Cannabis	61 (80.3)	42 (55.3)	0.001
Sedatives	31 (40.8)	30 (39.5)	0.9
Opioids	69 (90.8)	56 (73.7)	0.006
Others	12 (15.8)	6 (7.9)	0.1
Current substance use			
Tobacco	52 (68.4)	47 (61.8)	0.4
Alcohol	17 (22.4)	19 (25)	0.7
Cannabis	46 (60.5)	35 (46.1)	0.07
Sedatives	26 (34.2)	23 (30.3)	0.6
Opioids	48 (63.2)	56 (73.7)	0.2
Others	12 (15.8)	8 (10.5)	0.3

Table 4 Disability difference between the two studied groups using Sheehan Disability Scale

Parameters	Psychotic group (*N*=76)	Other disorders group (*N*=76)	*P* value
	n (%)		
Work/study disability			
No, mild, and moderate	13 (17.1)	40 (52.6)	≤0.001
Sever	40 (52.6)	29 (38.2)	
Extreme	23 (30.3)	7 (9.2)	
Social life disability			
No, mild, and moderate	7 (9.2)	57 (75)	≤0.001
Sever	41 (53.9)	7 (9.2)	
Extreme	28 (36.8)	12 (15.8)	
Home responsibilities disability			
No, mild, and moderate	14 (18.4)	46 (60.5)	≤0.001
Sever	26 (34.2)	11 (14.5)	
Extreme	36 (47.4)	19 (25)	

Table 5 Logistic regression analysis of factors associated with psychotic disorder

Parameters	?	*P* value	AOR (95% CI)
Residence			
Rural	1.3	0.001	4.1 (1.8–8.9)
Urban			1r
Main health care domain			
Traditional healer/self-care			1r
Governmental	−0.3	0.008	0.07 (0.01–0.5)
Private	−2.6	0.6	0.7 (0.2–2.8)
More than one	0.5	0.5	1.5 (0.4–5.9)
Lifetime cannabis: yes	1.2	0.007	3.2 (1.4–7.6)
Lifetime opioids: yes	1.3	0.015	3.9 (1.3–11.5)
Constant	−2.5		
% Correctly predicted	73		
Model χ^2	56.4		

? , regression coefficient; AOR, adjusted odds ratio, CI, confidence interval; r, reference group. *P* value is significant if less than or equal to 0.05.

Gattamorta *et al.* (2017); Taukoor *et al.* (2017). While other studies reported that females may have the predominance over males as the female sex represented 84 and 51.07% of the overall samples in Herz *et al.* (2018); Essau and de la Torre-Luque (2019), respectively. This also may be connected to culturally specific sex norms and expectations, as males are more vulnerable to substance use due to less social restrictions than females, more peer effect, and more self-medication to control the psychiatric illnesses by using substances.

Regarding the educational level, there predominance of the secondary level about (50%) in the case group and the postsecondary (47.4%) in the control group, which matched with Hussein *et al.* (2015); Taha *et al.* (2019), and Thungana *et al.* (2019), but not in line with Paruk *et al.* (2018). About the employment status, unemployment represents 72.4% in the case group and 60.5% in the control group, this is followed by manual workers and farmers. This is an agreement with Taha *et al.* (2019); Thungana *et al.* (2019), while this was not in line with Hussein *et al.* (2015), and Shaarawy *et al.* (2019) where employment was the main character.

Regarding the primary caregiver, the majority of the sample received their care by both parents about 65.8% in the case group and 63.2% in the control group followed single parent about 20% and then others that were below 10% of cases, this is consistent with Paruk *et al.* (2018), and Essau and de la Torre-Luque (2019). In this study, rural residence represents 71.1 in the psychotic adolescent group, while urban residence constitutes 60.5% in the nonpsychotic group. This went in agreement with Taha *et al.* (2019) (rural: 54%), and an Indian study was conducted by Srivastava *et al.* (2018) where the rural population represented about 73%.

This could be because the majority of patients who present to university public hospitals are from a lower and middle social class, as opposed to people from a higher social class who seek help at private hospitals and private clinics.

The disparity of access to the healthcare services also reflected on the widespread of psychosis, as in this study, the presence of government hospitals is seen as a protective factor against psychosis in case group, which is significantly different between case and control groups with the percentages of 2.6 and 28.9%, respectively, of all health domains, which may be explained by the easy accessibility to governmental hospitals for the control group that showed as mentioned before an urban majority.

The predominance of schizophrenia in the studied sample may be attributed to that the prodromal symptoms were often missed by both adolescents and

their caregivers, and there was a mean 6-month delay in seeking specialized help, which resembles enough duration for a transition of another psychotic spectrum into fully diagnosed schizophrenia. While half of the sample showed poor recognition of prodromal symptoms, early vague symptoms are often overlooked as part of the adolescent developmental phase or attributed to mood (Paruk *et al.*, 2015).

In this study, opioid use in the study sample represented the majority of the case group (90.8%) and (73.7%) of the control group, while tobacco came second to opioids representing 81.6% of the case group while only 61.8% of the control group, this was followed by the cannabis use with the percentage of 80.3% among the case group and 55.3% within the control group, finally, alcohol, sedatives, and other substances showed no significant difference among both groups. The following results in South Africa (Taukoor *et al.*, 2017; Paruk *et al.*, 2018), the USA (Deas, 2006), and Sri Lanka (Hapangama *et al.*, 2013) showed the predominance of alcohol and cannabis over opioids among adolescents with comorbid psychiatric illnesses.

The predominance of certain substances in adolescent patients with psychotic disorders may be explained by that nicotine, cannabis, and opioid use may target dopaminergic, glutamatergic, and GABAergic transmission, which also get involved in the pathophysiology of severe psychotic disorders (Hartz *et al.*, 2014). Regarding nicotine, it could increase the risk for psychosis through a shared genetic vulnerability (Chen *et al.*, 2016), also, the self-medication is suggested to reduce cognitive symptoms, negative symptoms, and some of the side effects of antipsychotic drugs (Srivastava *et al.*, 2018).

Regarding cannabis relation with psychosis among adolescents may be explained by the following: first, adolescents using high potent cannabis daily had more than four-fold predisposition of being diagnosed with psychosis compared with those without using cannabis (Di Forti *et al.*, 2019). Second, cannabis also affects the endocannabinoid signaling in the brain (which is an important determinant of maturation of the adult brain) (Muller-Vahl and Emrich, 2008), Third, it is hypothesized that repeated exposure to cannabis during adolescence may change the balance of GABAergic inhibitory inputs to pyramidal neurons in the prefrontal cortex, which might lead to impaired cognition and occurrence of psychotic symptoms (Maremmani *et al.*, 2014).

Regarding opioid relation with psychosis among adolescents may be explained by the direct involvement of opioid neuropeptides in the physiopathology of psychotic disorders (Eggan *et al.*, 2010) as there are three major physiologic opioid receptors, m-opioid, d-opioid, and k-opioid receptors, the k-opioid receptor is theorized to play a major role in the negative symptoms and cognitive blunting, found in patients with psychotic disorders (Feng *et al.*, 2012).

Early screening of patterns of substance use among adolescents either with or without psychiatric disorder will have a crucial role in improving diagnosis, prognosis, limit complications, and improving the response to psychotropic medications.

Strength and limitations of the study

It is one of the earliest studies in Egypt done to measure the sociodemographic and substance patterns among adolescents with mental health disorders with substance use. The study has some limitations: (a) recruitment of the sample had been from a single healthcare center, so the results of the study cannot be generalized, (b) case–control study design limits the ability to detect which substance use and or psychiatric disorders started first, and (c) small sample size of female participants.

Conclusion

The sociodemographic variables related to rural residence, nonemployment, less approach to governmental health service, and positive family history of psychiatric disorders were the major contributing factors for psychotic disorders in adolescents with substance use. The lifetime use of cannabis and opioids was the major risk of developing psychosis among adolescents.

Conflicts of interest

There are no conflicts of interest.

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