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Some psychiatric comorbidity among patients with substance abuse disorder related to pregabalin

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Abstract

Background: Pregabalin abuse is increasing worldwide and frequently comorbid with another psychiatric disorders including generalized anxiety, major depression, personality disorders, and suicide. Eighty-three patients meeting DSM-IV criteria for substance abuse disorders related to pregabalin were identified from the addiction clinic of El Khanka Psychiatric Hospital in Egypt for this observational cross-sectional study. We aimed to assess clinical characteristics of substance abuse disorder related to pregabalin, suicidal ideation, and psychiatric comorbidities associated with them. All participants were subjected to semi-structured interview designed to collect and identify the sociodemographic data and patterns of substances use, the Structured Clinical Interview for DSM-IV axis I disorders to diagnose comorbid major depression and generalized anxiety, Structured Clinical Interview for DSM-IV axis II disorders for diagnosis of borderline and antisocial personality disorders, Addiction Severity Index, Beck Depressive Inventory, Hamilton Anxiety Rating Scale, and Beck Scale for Suicidal Ideation and urine screening test for pregabalin and other substances.

Results: Forty-seven percent of the studied group had generalized anxiety disorder, 74.7% had major depression disorder, some patients had both major depression and generalized anxiety disorders, 78.3% had borderline personality disorder, 37.3% had antisocial personality disorder, and some patients had both borderline and antisocial personality disorders. There was a statistically significant increase in suicidal ideation among subjects with major depression, generalized anxiety, previous suicidal attempts, and borderline personality disorder.

Conclusions: There is a high comorbidity between pregabalin abuse and major depression disorder, generalized anxiety disorder, borderline personality disorder, and antisocial personality disorder. These psychiatric comorbidities were associated with high risk of suicidal ideations.

Keywords: Pregabalin, Abuse, Psychiatric comorbidity

Background

Substance use disorder is a set of behavioral, cognitive, and physiological symptoms resulting from using the substance continuously despite significant negative effects. It may result as a consequence of drug abuse and misuse [1]. Pregabalin is an analog of the gamma-aminobutyric acid mammalian neurotransmitter and its structurally related compound gabapentin known as d2-δs d its. They act as inhibitory modulators of neuronal excitability that reduce ectopic neuronal activation of hyperexcited neurons, while normal activation remains unaffected [2]. Pregabalin is approved for the treatment of partial epilepsy, generalized anxiety

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disorder, peripheral and central neuropathic pain, and fibromyalgia with an accepted dosage range of 150 to 600 mg/day [2]. Pregabalin was classified as schedule V of the Controlled Substances Act (CSA) in 2005 in the USA [3]. The first reports of pregabalin abuse and dependence appeared in 2006 and involved cases from Italy, Germany, and Turkey. Many cases of pregabalin abuse have been reported by the Scandinavian, British, French, and German pharmacovigilance systems since 2008, most of which described patients currently or formerly dependent on other such substances [4]. Pregabalin indeed was considered by users as an "n rs ered [4]. Pregaba for recreational purposes with effects similar to that of alcohol/GHB/BZDs such as entactogenic feelings and dextromethorphan-like disassociation [4]. High pregabalin abuse rates have been observed in patients with co-occurrences of psychoactive substance use and psychiatric disorders (dual diagnosis) [5]. The prevalence of pregabalin misuse disorder in males is more frequent than females. Pregabalin misuse is more prevalent among young people than in older age. The most common reason for pregabalin abuse is to have a good sleep, for self-treatment of anxiety, peer pressure, and depression [6]. Abuse of pregabalin and gabapentin for their euphoric effects may only be part of the story. Pregabalin has also been associated with suicidal ideation and depressed mood. In a small case series, approximately 10% of patients recently started on pregabalin treatment experienced changes in mood and developed depression or suicidal ideation, or both, which improved on cessation or dose reduction. Monitoring for depression after starting treatment and increasing dose may also help to reduce the death toll [7]. In Egypt, due to its marked increase in rate of abuse in the last few years, pregabalin was recently included in the schedule of controlled substances. In this study, we intended to assess clinical characteristics of substance abuse disorder related to pregabalin and to determine some psychiatric comorbidities (major depression, generalized anxiety, borderline, and antisocial personality disorders) in patients with substance abuse disorder related to pregabalin and also to evaluate the relationship between psychiatric disorders and suicidal ideation in those patients.

Methods

Study site, design, and participants

This cross-sectional study was done at the addiction outpatient clinic of El Khanka Psychiatric Hospital in Egypt from March 2020 to February 2021. The sample size was 83 consecutively recruited subjects with substance abuse disorder related to pregabalin that were calculated by the OPEN EPI software package [8]. Assuming that total number of patients with substance abuse disorder related to pregabalin was 120 patient and prevalence of suicidal ideation and behavior is 22%, so sample size was 83, at confidence level 95% and power 80%. Inclusion criteria were as follows: participants had to fulfill the DSM-IV criteria for substance abuse disorder related to pregabalin, the age ranged from 18 to 60 years, and both sexes were included. Exclusion criteria were as follows: intellectual disability, dementia, delirium, severe withdrawal or intoxication symptoms (e.g., delirious state, unstable vital signs, agitation, or positive psychotic features), psychiatric disorders (except for major depression disorder, generalized anxiety disorder, borderline personality disorder, and antisocial personality disorder), and chronic debilitating medical diseases. We determined subjects who were eligible for the study and explained our studysorderns, agitationtion symp, and a written informed consent was obtained before enrolling in our research.

Study tools

Participants who decided to participate were evaluated using the following measures:

1. Semi-structured interview designed to collect and identify the following:

a. Sociodemographic data including age, sex, occupation, education, socioeconomic level, marital status, residence, and cigarette smoking (number per day and duration)
b. Clinical assessment of patients: history of pregabalin abuse including starting dose, daily dose, maximum dose, duration, cause of abuse, cause of treatment, last dose, presence of pain as a cause of pregabalin abuse, monosubstance or polysubstance, and continuous or intermittent course
c. History of other substances' abuse as type, dose per day, duration, and route. These substances include alcohol, cannabis, tramadol, heroin, benzodiazepine, and others.
d. History of previous suicidal attempts

2. The Structured Clinical Interview for DSM-IV axis I disorders (SCID-I) [9] is used to diagnose

substance abuse disorder "related to pregabalin," major depression disorder, and generalized anxiety disorder. The basic procedure involved the interviewer reading the SCID questions to the subject in sequence, the goal being to elicit the necessary information to allow the interviewer to decide whether the individual DSM-IV criterion was met or not. The Arabic version of the SCIDI used in this study was converted and validated by prior studies undertaken at the Institute of Psychiatry, Ain Shams University [10].

3. The Structured Clinical Interview for DSM-IV axis II personality disorder [11] was made to define personality disorders or stable traits already existing before any current axis I pathology, and it follows the diagnostic guidelines of DSM IV. In this study, patients answer only the question related to borderline and antisocial personality disorder. The SCID-II is most useful to provide standardized, comprehensive assessment of personality disorders, whether in research, forensic, or clinical settings [12]. The Arabic version used in this study was translated and validated in previous Egyptian study [13].
4. Beck Depressive Inventory [BDI] is the most widely used scale for depression. It is a self-report subjective scale consisted of twenty-one items that cover emotional, somatic, and behavioral symptoms in depressive patients [14]. BDI cutoff (> 12) was used to identify the disorder score (10–18), indicate mild to moderate depression (19–29), indicate moderate to severe (> 30), and indicate severe depression [15]. Validated Arabic version of the scale was used in this study [16].
5. Beck Scale for Suicidal Ideation is a 19-item clinical research instrument designed to quantify and assess suicidal intention. Each statement group consists of three sentences that describe different intensities of suicidal ideation, representing 3-point scale (0 to 2); the total score can range from 0 to 38 with higher values indicating a greater risk of suicide. No specific cutoff scores exist to classify severity or guide patient management. Increasing scores reflect greater suicide risk, and any positive response merits investigation; the scale was found to have high internal consistency and moderately high correlations with clinical ratings of suicidal risk and self-administered measures of self-harm. Furthermore, it was sensitive to changes in levels of depression and hopelessness over time. Its construct validity was supported by two studies by different investigators testing the relationship between hopelessness, depression, and suicidal ideation and by a study demonstrating a significant relationship between high level of suicidal ideation and "dichotomous" attitudes about life and related concepts on a semantic differential test. Factor analysis yielded three meaningful factors: active suicidal desire, specific plans for suicide, and passive suicidal desire [17].
6. Hamilton Anxiety Rating Scale (HAM-A) is one of the first rating scales developed to measure the severity of anxiety symptoms and is still widely used today in both clinical and research settings. The scale consists of 14 items, each defined by a series of symptoms, and measures both psychic anxiety (mental agitation and psychological distress) and somatic anxiety (physical complaints related to anxiety). Each item was scored on a scale of 0 (not present) to 4 (severe), with a total score range of 0–56, where < 17 indicates mild severity, 18–24 mild to moderate severity, and 25–30 moderate to severe [18]. Maier et al. (1988) [19] tested the scaleedt te ical nxiand validity in two samples of 97 anxious and 101 depressed individuals and concluded that the reliability and concurrent validity of the HAM-A and its subscales were sufficient; there is a reasonable inter-rater reliability and good 1-week retest reliability [20]. We used the Arabic manual of Hamilton anxiety scale translated and adapted by Lotfy Fateem [21].
7. Urine screening test: urine samples were collected after the session of assessment. Urine specimens in clean and dry plastic containers at room temperature were screened using a rapid, one-step screen test for the simultaneous, qualitative detection of multiple drugs and metabolites in human urine in vitro. The multidrug one-step screen test panel (urine) is a lateral flow chromatographic immunoassay for the qualitative detection of the following seven drugs without the need for instruments (amphetamines, barbiturates, benzodiazepines, cocaine, opiates, tetrahydrocannabinol (THC) and tramadol). We also used right sign screen test to search for pregabalin in urine samples.

Statistical analysis

The data analysis was performed using the Statistical Package for Social Sciences (SPSS version 20). The categorical data were presented in the form of number and percentage. Continuous data were expressed as mean ta werstandard deviation) and median with the interquartile

range (IQR). Chi-square was used as a test of significance of the differences among groups. Binary logistic regression analysis was used to assess the predictors of depression. A *P*-value < 0.05 was considered to indicate statistical significance [22].

Results

Demographic characteristics of the studied group

The age ranged from 20 to 56 years with mean 32.61 years. Regarding sex, almost all of them were male (96.4%). More than 72% of subjects were resident in urban area, and 53% of them were married. Regarding education and occupation, 37.5% had moderate education, and 69.9% of them were skilled workers. Low and moderate social classes were founded among 54.2% and 45.8% of subjects, respectively. Finally, almost all of them were smoker (98.8%) with median duration 16.5 years and median 20 cig./day (Table 1).

Table 1 Demographic characteristics of the studied group

Variable		(*n* = 83)	
		No.	%
Age	Mean ± SD	32.61 ± 7.07	
	Range	20–56	
Sex	Male	80	96.4
	Female	3	3.6
Residence	Urban	60	72.3
	Rural	23	27.7
Marital status	Single	34	41
	Married	44	53
	Widow	1	1.2
	Divorced	4	4.8
Education	Illiterate	22	26.5
	Read and write	22	26.5
	Moderate	31	37.3
	High	8	9.6
Occupation	Not working	8	9.6
	Skilled	58	69.9
	Employee	14	16.9
	Student	1	1.2
	Professional	1	1.2
	Other	1	1.2
Social class	Low	45	54.2
	Middle	38	45.8
Smoking	No	1	1.2
	Yes	82	98.8
Duration of smoking (years)	Median (IQR)	16.5 (11.75–22.25)	
No. of cigg./day	Median (IQR)	20 (20–40)	

SD Standard deviation, *IQR* Interquartile range

Clinical characteristics of pregabalin abuse among the studied group

The median duration of pregabalin abuse among the studied group was 24 months. The median (start dose, maximum dose, and daily dose) was 300 mg, 1500 mg, and 1500 mg, respectively. Median of days since last dose was taken was 15 days. About 87% of subjects took pregabalin continuously, and 79.5% had it with other substances. Replacement of heroin (59%) was the most frequent cause of pregabalin abuse, and the most common cause for seeking treatment was family causes (80.7%). Pain was reported as a cause of pregabalin abuse in 48.2%, and +ve urine test for pregabalin was founded in 27.7% (Table 2 and Fig. 1).

Psychiatric assessment of the studied group

Forty-seven percent of the studied group had generalized anxiety, 74.7% had major depression, some patients had both major depression and generalized anxiety, 78.3% had borderline personality, 37.3% had antisocial personality, and some patients had both borderline and antisocial personality disorders. BDI revealed that 50.6% of the studied group had severe depression, while Hamilton anxiety score revealed that 21.7% had very severe anxiety. Finally, 25.3% had previous suicidal attempts (Table 3).

The relationship between psychiatric disorders and suicidal ideation among the studied group

There was a statistical significant increase in risk of suicidal ideation among subjects with both major depression and generalized anxiety disorders, those with previous suicide attempts, and those with borderline personality disorder. Also, there was a statistical significant increase in risk of suicidal ideation with increased severity of depression and anxiety according to Beck Depression Inventory score and Hamilton anxiety score (Table 4).

Discussion

Up to our knowledge, this is the first study that assessed the psychiatric comorbidity and its relation to suicidal ideations in patients abusing pregabalin in Egypt. We conducted our study on 83 patients abusing pregabalin, and we found a high prevalence of psychiatric comorbidities; 74.7% of the participants had major depression, and 47% had generalized anxiety. Our finding corresponds to the existing literature about substance abuse. Lai et al. (2015) found that depressive and anxiety disorders are highly associated with illicit drug use especially in those with lifetime drug dependence where almost 50% has a comorbid anxiety

Table 2 Clinical characteristics of pregabalin abuse among the studied group

Variable		(*n* = 83)	
		No.	%
Duration (months)	Median (IQR)	24 (12–36)	
Start dose (mg)	Median (IQR)	300 (150–750)	
Maximum dose (mg)	Median (IQR)	1500 (750–1500)	
Daily dose (mg)	Median (IQR)	1500 (750–1500)	
Last dose since (day)	Median (IQR)	15 (4–30)	
Course	Continuous	72	86.7
	Intermittent	11	13.3
Type of addiction	Mono	17	20.5
	Poly	66	79.5
Causes of abuse	Replacement of heroin	49	59
	Due to pain	40	48.2
	Replacement of tramadol	26	31.3
	For its euphoric and analgesic effect	8	9.6
Causes of seeking treatment	Family causes	67	80.7
	Medical causes	14	16.9
	Economic causes	2	2.4
Urine test	−ve	60	72.3
	+ve	23	27.7

IQR interquartile range

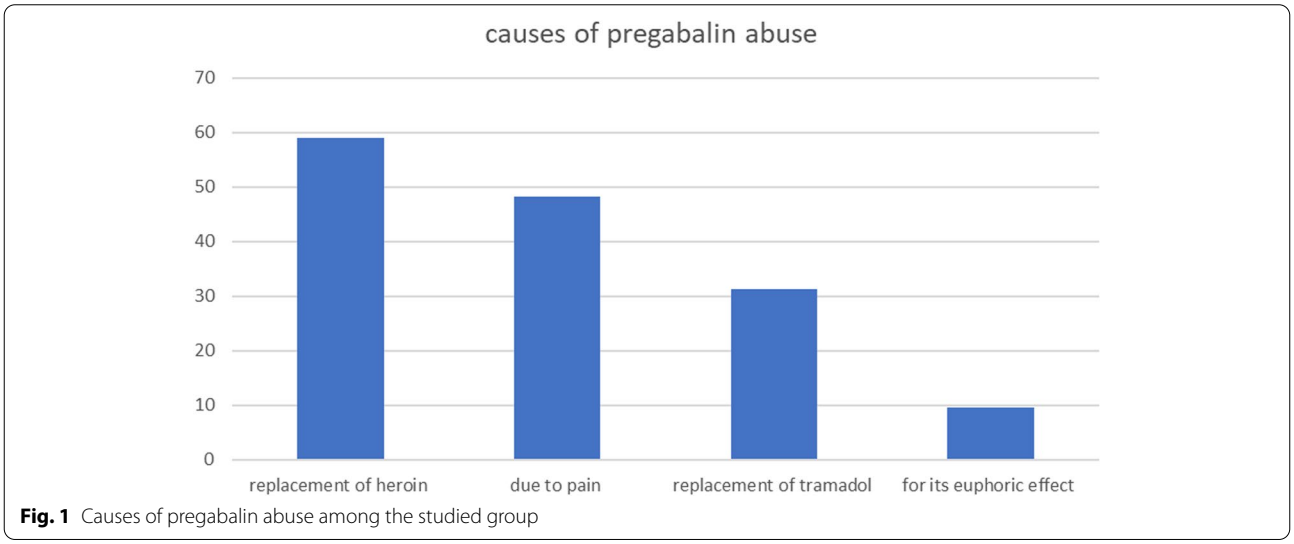

Fig. 1 Causes of pregabalin abuse among the studied group

and depressive disorders [23]. Also, Terracciano et al. found that patients with substance use disorders have a higher comorbidity with depression and anxiety symptoms [24]. This finding can be explained by the fact that pregabalin decreases the brain serotonin level [25]. In some cases, the substance is used as a self-medication to help the resolution of the symptoms of depression and anxiety [6].

In our study, we found that 78.3% of participants had a borderline personality disorder (BPD), and 37.3% of them had antisocial personality disorder (ASPD). Consistent with our results, Kienast et al. (2014) found that about 78% of adults with BPD develop a substance-related disorder or addiction at some time in their lives [26], and Evren et al. (2004) found that rates of ASPD in patients with substance abuse typically range

Table 3 Psychiatric assessment among the studied group

Variable		(*n* = 83)	
		No.	%
Psychiatric comorbid	Generalized anxiety	39	47
	Major depression	62	74.7
Personality disorder	Borderline	65	78.3
	Antisocial	31	37.3
Beck depression inventory	Mean ± SD	33.07 ± 17.86	
	Median (IQR)	37 (23–46)	
	Range	0–69	
	No	17	20.5
	Mild depression	2	2.4
	Moderate depression	2	2.4
	Severe depression	20	24.1
	Very severe depression	42	50.6
Hamilton anxiety	Mean ± SD	16.98 ± 13.21	
	Median (IQR)	16 (4–28)	
	Range	0–46	
	No anxiety	13	15.7
	Mild	29	34.9
	Mild to moderate	16	19.3
	Moderate to severe	7	8.4
	Very severe	18	21.7
Previous suicidal attempts	No	62	74.7
	Yes	21	25.3

SD standard deviation, *IQR* interquartile range

from 25 to 50% [27]. Current understanding of this comorbidity suggests a presence of a primary personality pathology leading to the development of secondary SUD. This has been proven by a lot of evidence, including longitudinal studies, reporting a prediction of later onset of SUD by personality factors during adolescence and early adulthood as well as retrospective studies suggesting the presence of personality psychopathology in many patients with SUDs. The behavioral disinhibition pathway has been the best documented and might account for the observed high comorbidity between personality disorders such as ASPD and BPD and substance use. The pathway recommends that traits such as a high anti-sociality and impulsivity, along with low harm avoidance, are associated with a higher risk of drug use [28].

In our study, we found that 50.6% of the participants had a very severe depression according to Beck Depressive Inventory scores. Similar to our results, Sayed et al. found that 54% of the substance abuse group had severe level of depression using BDI in pre-psycho-educational program of drug addict patients [29].

According to Hamilton Anxiety Rating Scale scores, 21.7% of our participants had a very severe anxiety. In line with our result, Mohamed et al. found that the prevalence of severe anxiety was 67% in the substance abuse group using Hamilton Anxiety Rating Scale [30]. These differences may be due to the anxiolytic effect of pregabalin in our study. Gabapentinoids (gabapentin and pregabalin) have been known to have anxiolytic, analgesic, and anticonvulsant effects [31].

In our study, we found a significant increase in the risk of suicidal ideation with increased severity of both depression and anxiety according to Beck Depression Inventory scores and Hamilton anxiety scores, and there was a positive correlation between Beck suicidal ideation score and Beck Depression Inventory score and Hamilton anxiety score. Consistent with our result, Fahmy et al. (2015) found a significant relation between the suicidality in polysubstance abusers and a high level of anxiety as assessed by the Ham-A scale [32]**.** Close to our finding, Rodríguez-Cintas et al. (2018) study, they revealed that patients with lifetime suicidal behavior (including suicidal ideation and/or previous suicide attempts) had greater scores in BDI and STAI (State-Trait Anxiety Inventory) scales compared to patients with no prior suicidal acts/ideation [33].

According to our results, we found a significant increase in the frequency of high risk suicidal ideation in patients who had a borderline personality disorder, there was a study confirmed our result revealed that borderline personality disorder (BPD) and substance use disorder (SUD) are severe psychiatric disorders associated with dysfunction and increased risk of suicide and premature death. Co-occurrence of BPD and SUD results in additional increase in rates of suicidal and self-harming behavior [34].

Limitations of the study

1. With increased number of our sample size, the association between psychiatric comorbidity and pregabalin abuse will be more obvious.
2. We did not assess the bidirectional link between pregabalin abuse and psychiatric comorbidity, so longitudinal studies are recommended to clarify the relation and causality between pregabalin abuse and psychiatric comorbidity.
3. Most of our subjects were abusing other substances with pregabalin; future studies with monosubstance abuse of pregabalin were recommended to clarify with more certainty the relation between pregabalin and comorbid psychiatric disorders.

Table 4 The relationship between psychiatric disorders and suicidal ideation among the studied group

Variable	*N*	No risk (*n* = 56)		Low risk (*n* = 16)		High risk (*n* = 11)		χ^2	*P*	
		No.	%	No.	%	No.	%			
Major depression	No	21	20	95.2	1	4.8	0	0	**10.01**	**0.007**
	Yes	62	36	58.1	15	24.2	11	17.7		*
Generalized anxiety	No	44	37	84.1	5	11.4	2	4.5	**12.23**	**0.002**
	Yes	39	19	48.7	11	28.2	9	23.1		*
Borderline personality	No	18	17	94.4.	1	5.6	1	5.6	**4.31**	**0.03**
	Yes	65	39	60	15	23.1	10	15.4		*
Antisocial personality	No	52	38	73.1	8	15.4	6	11.5	2.05	0.36
	Yes	31	18	58.1	8	25.8	5	16.1		NS
BDI	No	17	16	94.1	1	5.9	0	0		
	Mild to moderate	4	4	100	0	0	0	0		
	Severe to very severe	62	36	58.1	15	24.2	11	17.7	**10.09**	**0.04***
Hamilton anxiety	No anxiety	13	13	100	0	0	0	0		
	Mild	29	22	75.9	5	17.2	2	6.9		
	Mild to moderate	16	10	62.5	3	18.8	3	18.8	**15.55**	**0.04***
	Moderate to severe	7	3	42.9	3	42.9	1	14.3		
	Very severe	18	8	44.4	5	27.8	5	27.8		
Previous suicidal attempts	No	62	49	79	10	16.1	3	4.8	**19.21**	**< 0.001**
	Yes	21	7	33.3	6	28.6	8	38.1		**

χ^2 chi-square test, *NS* nonsignificant ($P > 0.05$). *Significant ($P < 0.05$). **Highly significant ($P < 0.001$)

Conclusions

There is a high comorbidity between pregabalin abuse and major depression, generalized anxiety, borderline personality disorder, and antisocial personality disorder. These psychiatric comorbidities may be associated with high risk of suicidal ideations. So pregabalin abuse is dangerous like other substances of abuse and must be used with caution under strict medical supervision.

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Authors' contributions
AY put the study's design, shared in revising the records to choose the eligible sample, shared in collecting the data, made the final revision of the manuscript, and submitted it. AE and MS shared in revising the records to choose the eligible sample, helped collect and analyze the data, and then drafted the article. All authors agreed with the results and conclusions of this research and approved the final manuscript.

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Availability of data and materials
Upon request.

Declarations

Ethics approval and consent to participate
The Institutional Review Board of the Faculty of Medicine, Zagazig University, accepted this study with official permission (ZU-IRB#5952). We explained the aim of our study, its procedures, and an obligatory yes or no inquiry representing the participants' acceptance or refusal to participate in our research. Only the study researchers could access the participants' personal data, hidden as data were analyzed.

Consent for publication
Not applicable.

Competing interests
The authors declare that they have no competing interests.

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References

1. Kerridge BT, Pickering RP, Saha TD, Ruan WJ, Chou SP, Zhang H, Jung J, Hasin DS (2017) Prevalence, sociodemographic correlates and DSM-5 substance use disorders and other psychiatric disorders among sexual minorities in the United States. Drug Alcohol Depend 170:82–92. https://doi.org/10.1016/j.drugalcdep.2016.10.038
2. Papazisis G, Tzachanis D (2014) Pregabalin's abuse potential: a mini review focusing on the pharmacological profile. Int J Clin Pharmacol Ther 52(8):709–716. https://doi.org/10.5414/CP202118
3. Drug Enforcement Administration (2005) Department of Justice schedules of controlled substances: placement of pregabalin into schedule V. Final rule. Fed Regist 70(144):43633
4. Lancia M, Gambelunghe A, Gili A, Bacci M, Aroni K, Gambelunghe C (2020) Pregabalin abuse in combination with other drugs: monitoring among methadone patients. Front Psychiatry 10:1022
5. Bastiaens L, Galus J, Mazur C (2016) Abuse of gabapentin is associated with opioid addiction. Psychiatr Q 87(4):763–767

6. Gabr AA (2019) Prevalence and risk factors of pregabalin misuse among patients with substance use disorder. Al-Azhar Assiut Med J 17(4):393
7. King MA (2018) Pregabalin and gabapentin associated with depression and suicidal ideation. BMJ 363:k4979
8. Dean A, Sullivan KM, Soe MM (2013) OpenEpi: Open Source Epidemiologic Statistics for Public Health. Version 2.3.1
9. First MB, Spitzer RL, Gibbon M, Williams JB (2002) Structured Clinical Interview for DSM-IV-TR axis I disorders, research version, patient edition. SCID-I/P, New York, pp 94–91
10. El Missiry A, Sorour A, Sadek A, Fahy TA, Mawgoud M, Asaad T (2003) Homicide and psychiatric illness: an Egyptian study [MD thesis]. Faculty of Medicine, Ain Shams University, Cairo
11. First M, Gibbon M, Spitzer R (1997) Structured Clinical Interview for DSM-IV axis II personality disorders (SCID-II). American Psychiatric Press; Inc
12. Zimmerman M, Pfohl B, Coryell W, Stangl D, Corenthal C (1988) Diagnosing personality disorder in depressed patients: a comparison of patient and informant interviews. Arch Gen Psychiatry 45:733–737
13. Hatata H, Khalil A, Asaad T (2003) Dual diagnosis in substance use disorders a study in Egyptian sample. Unpublished MD thesis. Institute of psychiatry .Ain shams university, Egypt
14. Beck AT, Steer RA, Carbin MG (1988) Psychometric properties of the Beck Depression Inventory: twenty-five years of evaluation. Clin Psychol Rev 8(1):77–100
15. Beck, A. T., & Beamesderfer, A. (1974). Assessment of depression: the depression inventory. S. Karger.
16. Abdel-Khalek AM (1998) Internal consistency of an Arabic adaptation of the Beck Depression Inventory in four Arab countries. Psychol Rep 82(1):264–266
17. Beck AT, Steer RA, Ranieri WF (1988) Scale for suicide ideation: psychometric properties. J Clin Psychol 44:499–505
18. Hamilton M (1959) Hamilton Anxiety Rating Scale. Brit J Med Psychol 32:50–55
19. Maier W, Buller R, Philipp M, Heuser I (1988) The Hamilton anxiety scale: reliability, validity and sensitivity to change in anxiety and depressive disorders. J Affect Disord 14(1):61–68
20. Thompson E (2015) Hamilton rating scale for anxiety (HAM-A). Occup Med 65(7):601
21. Fateem L (1998) Arabic manual of Hamilton anxiety scale translated and adapted by Lotfy Fateem. The Anglo-Egyptian Bookshop, Egypt
22. IBM (2020) IBM SPSS Statistics for Windows, Version 27. IBM Corp, Armon http://www-01.ibm.com/support/docview.wss?uid=swg27049428
23. Lai HMX, Cleary M, Sitharthan T, Hunt GE (2015) Prevalence of comorbid substance use, anxiety and mood disorders in epidemiological surveys, 1990–2014: a systematic review and meta-analysis. Drug Alcohol Depend 154:1–13
24. Terracciano A, Löckenhoff CE, Crum RM, Bienvenu OJ, Costa PT (2008) Five-factor model personality profiles of drug users. BMC Psychiatry 8(1):1–10
25. Tandon VR, Mahajan V, Gillani ZH, Mahajan A (2013) Pregabalin-induced self-harm behavior. Indian J Pharmacol *45*(6):638
26. Kienast T, Stoffers J, Bermpohl F, Lieb K (2014) Borderline personality disorder and comorbid addiction: epidemiology and treatment. Deutsches Ärzteblatt Int 111(16):280
27. Evren C, Kural S, Erkiran M (2006) Antisocial personality disorder in Turkish substance dependent patients and its relationship with anxiety, depression and a history of childhood abuse. Israel J Psychiatry Relat Sci 43(1):40
28. Parmar A, Kaloiya G (2018) Comorbidity of personality disorder among substance use disorder patients: a narrative review. Indian J Psychol Med 40(6):517–527
29. Sayed SM, Ahmad HEK, Sayied NE, El-Aziz A, Mohamed A (2020) Effect of psycho-educational program on depression among drug addict patients at Assiut University Hospital. Assiut Sci Nurs J 8(20):45–55
30. Mohamed II, Ahmad HEK, Hassaan SH, Hassan SM (2020) Assessment of anxiety and depression among substance use disorder patients: a case-control study. Middle East Curr Psychiatry 27:1–8
31. Singh D, Yadav JS, Jamuda BK, Singh P (2019) Oral pregabalin as premedication on anxiolysis and stress response to laryngoscopy and endotracheal intubation in patients undergoing laparoscopic cholecystectomy: a randomized double-blind study. Anesth Essays Res 13(1):97
32. Fahmy MT, Haggag WL, Mohamed KA, Baalash AA (2015) A study of the personality traits and the level of anxiety in suicidal polydrug users. Egyptian J Psychiatry 36(2):106
33. Rodríguez-Cintas L, Daigre C, Braquehais MD, Palma-Alvarez RF, Grau-López L, Ros-Cucurull E et al (2018) Factors associated with lifetime suicidal ideation and suicide attempts in outpatients with substance use disorders. Psychiatry Res 262:440–445
34. Philips B, Wennberg P, Konradsson P, Franck J (2018) Mentalization-based treatment for concurrent borderline personality disorder and substance use disorder: a randomized controlled feasibility study. Eur Addict Res *24*(1):1–8

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