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# Mood regulation, alexithymia, and personality disorders in female patients with opioid use disorders

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## Abstract

**Background:** Opioid use disorders are rising among females. So, there is a need for more recognition of the various factors contributing to this trend in women, to help us to plan effective interventions to this group of patients. Hence, we conducted this research to identify risk factors associated with opioid use in females including mood regulation, alexithymia, and personality disorders. The study included 60 females ranging from 18 to 45 years [30 females diagnosed with opioid use disorder according DSM-IV (case group), and 30 females with no mental illness diagnosis according to general health questionnaire (control group)]. The subjects were recruited from inpatients and outpatient clinic of Al-Abbassia Hospital, Cairo, Egypt. Both groups were assessed by the Structured Clinical Interview for DSM-IV axis II disorders (SCID II) for personality, Trait Meta-Mood Scale (TMMS) for emotional regulation and Toronto Alexithymia Scale-20 (TAS-20) for alexithymia.

**Results:** Regarding sociodemographic data, cases were significantly different from controls as they are less educated ( $P < 0.001$ ), more 73% (22) unemployed ( $P < 0.001$ ) and 56.7% (17) of cases had positive family history of first degree relatives with drug use ( $P = 0.001$ ).

SCID II showed more significant personality disorders diagnosis among cases as (borderline, antisocial, paranoid, schizotypal, and schizoid personality disorder) ( $P < 0.001$ ,  $< 0.001$ , 0.01, 0.003, and 0.005, respectively) and also multiple personality disorders ( $P < 0.001$ ) diagnosis. As regards alexithymia all cases were classified as having alexithymia 100% versus 56.7% among controls. Meanwhile, cases showed more difficulty in identifying ( $P < 0.001$ ) and describing feelings ( $P = 0.001$ ) and more externally oriented thinking ( $P = 0.010$ ). Results of TMMS showed cases had lower total score on TMMS ( $p = 0.016$ ). Signifying their inability to regulate their emotions in comparison to controls. There was no significant association between alexithymia, sociodemographic data, TMMS, and SCID II among cases group.

**Conclusions:** The present study found that females with opioid use disorders tend to be less educated, unemployed with positive family history of substance abuse, and diagnosed mainly with cluster A and B personality disorders. Moreover, had difficulty in identifying, describing, and regulating their emotions.

**Keywords:** Opioid use disorders, Females, Mood regulation, Alexithymia, Personality disorders

## Background

The number of people with opioid dependence disorder escalated from 10.4 million in 1990 to 15.5 million in 2010. The areas showing the highest numbers are North Africa, South Asia, East Asia, Western Europe, and the Middle East. This rise increased the disease burden created by opioid dependence by 73% with 9.2 million

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disability-adjusted life years calculated attributable to opioid dependence [1]. Thus, this problem lead to large number of years lost by these patients either by premature death or living with a disability.

Diagnosis of substance abuse and dependence disorders among women is weighty lower in comparison to men and in the same time are ignored when discussing women's mental health [2].

However, although their rates are lower, these disorders are more common among women when compared with other mental health problems experienced by females such as dysthymia and anxiety disorders. Therefore, it is important not to underrate both the frequency of occurrence of these disorders among women or their impact on the mental health of females who experience these problems [3].

The dominance of gender abusing drugs has varied over the era from male to female. Where, the contemporary epidemiological studies illustrated the catching up trend of young females beating males in terms of drug abuse. This shift mandate the direction of the current researches to focus on the impact of gender on drug abuse together with investigating its neurobiological basis and its new implications on treatment [4].

Several risk factors influencing opioid misuse including younger age, having past or current history of substance abuse, unmanaged psychiatric disorders and enabling family environments [5]. On the other hand, the risk factors determined to be associated with increased chances for opioid prescription include female gender, older age, being widowed or divorced, anxiety or depression diagnosis, lower socioeconomic status, unemployment, and lower income [6].

Other factors including emotion dysregulation where people use substance as coping motive to avoid or decrease emotional distress [7]. Also, alexithymia makes some people more prone for substance dependence as drugs help to distance them from the negative emotional experiences which consequently reinforce dependence [8]. Finally, personality disorders (PD) and substance use disorders commonly co-occur with prevalence of PD in patients with substance use range from 24 to 90% [9]. Unfortunately, the existence of comorbid PD signify more severe condition with disadvantageous prognosis and unfavorable clinical outcome [10].

Along the previous decades, drug dependence has been considered to be a male problem so researches revolved around them. Hence, epidemiological, behavioral pharmacology, and neurobiology studies determining factors or managements the effects of drug abuse focused on men. Neglecting factors related to women. Consequently, the perspective of drug dependence from women beholder is not explored by researches [11].

Hence, it was crucial to explore risk factor for substance abuse in females including personality disorders, alexithymia, and emotion regulation. As targeting these problems in therapy will improve the management as well as the outcomes related to opioid use in this population.

## Methods

A cross-sectional comparative study was conducted at outpatient clinic and inpatient substance use unit of Al-Abbassia Mental Health Hospital located in eastern Cairo, Egypt, serving urban and rural areas including Greater Cairo and other governorates as well. All procedures were reviewed and approved by the Ethical Committee of Ain Shams University. Informed written consent was obtained from the participants of both groups after they recieved an explanation about the study objectives, and the subjects were assured about the confidentiality of their information.

Subjects of the study were divided into 2 groups:

*Case group* including 30 females patients fulfilling the diagnosis of opiates use disorder as outlined in the DSM- IV criteria recruited from the outpatient clinic and inpatients of Al-Abbassia Hospital. Inclusion criteria were age 18 to 45 years old and agree to sign an informed written consent. They were excluded if there was evidence of presence of any comorbid psychiatric condition diagnosed by SCID I.

*Control group* comprised of 30 participants, closely matching case group in terms of their age and sex. They were selected after being screened by the general health questionnaire as free from any psychiatric diagnosis. They were recruited from the employees working at the Abbassia Hospital.

## Procedure

Case group were interviewed using the Structured Clinical Interview for DSM-IV (SCID-I) to diagnose substance dependence and to exclude other psychiatric disorders.

Control group were subjected to assessment using the General Health Questionnaire (GHQ) before being enrolled to ensure their eligibility to be included in the study after being screened as normal.

Both groups were then assessed for personality disorders, alexithymia, and emotional regulation using the Structured Clinical Interview for DSM-IV Personality Disorders (SCID-II), Toronto Alexithymia Scale-20, and the Trait Meta Mood Scale (TMMS) respectively.

## Tools used

### **Structured Clinical Interview for DSM-IV (SCID I) [12]**

There are 7 diagnostic modules, focused on different diagnostic groups: mood, psychotic, substance abuse, anxiety, somatoform, eating, and adjustment disorders. The Arabic version was used [13].

### **Structured Clinical Interview for DSM-IV Personality Disorders (SCID-II) [14]**

It was used as a diagnostic tool for personality disorders according to the DSM IV criteria. The SCID-II is a 113-item structured clinical interview for Axis II disorders. The Arabic version was used [15].

### **General health questionnaire (GHQ) [16]**

It is a self-reporting questionnaire developed to detect functional psychiatric disorders in the community and primary care centers. The questions were divided into scales somatic complaints anxiety/insomnia social dysfunction and severe depression. The Arabic version was used [17].

### **Trait Meta Mood Scale (TMMS) [18]**

It was designed to assess how people reflect upon their moods, and determine the extent to which people attend to and value their feelings (attention), feel clear rather than confused about their feelings (clarity), and use positive thinking to repair negative moods (repair). It consists of 30 items on a 5-point Likert type scale. High scores indicate better ability to deal with emotions. The Arabic version was used [19].

### **Toronto Alexithymia Scale-20 (TAS-20) [20]**

It is the most frequently used assessment instrument for alexithymia including three factors: "Difficulty in describing the feelings", "Difficulty in identifying feelings", and "Externally oriented thinking". Each sub-scale is measured on a 5 point Likert scale. It is suggested that a total score of 61 and above indicates alexithymia and that score of 51 and below indicates low or an absence of alexithymia. A score between 52 and 60 represents a moderate degree of alexithymia. The Arabic version was used [21].

## Statistical methods

All recorded data were analyzed using the appropriate version of Package for Social Sciences (SPSS) for Microsoft windows software package. Version 20 was used. Statistically significant findings were determined by a 2-tailed  $P$  value  $<0.05$ . The  $\chi^2$ -test was used to

compare case group participants and control group participants.

## Results

### **Comparison between cases and controls as regards**

#### **A. Sociodemographic data**

The pattern of substances used among female cases was heroin in 43.3%; followed by poly substance including both tramadol and heroin as main substance in 33.3%. The age of females in both groups was matched ranged from 18 to 45 years. However, on comparing both groups in context of other sociodemographic factors, cases were statistically significant different from controls as they are less educated (mainly illiterate, primary, or preparatory)  $p$  value ( $<0.001$ ), 73% (22) were unemployed with  $p$  value ( $<0.001$ ) and 56.7% (17) of cases had positive family history of first degree relatives with drug use  $P$  value (0.001) As shown in Table 1.

#### **B. Alexithymia**

Toronto Alexithymia Scale was used to assess the degree of identification and description of feelings among both groups. A statistically significant difference between cases and controls were found ( $P < 0.001$ ) as regard the total alexithymia score and its subscales. Where all cases were classified as having alexithymia 100% versus 56.7% among controls. Meanwhile, cases showed more difficulty in identifying and describing their feelings and showing more externally oriented thinking. As illustrated in Table 2.

#### **C. Emotion regulation by Trait Meta Mood Scale (TMMS)**

According to data shown in Table 3, cases had lower total score on TMMS and on the clarity of feeling subscale with statistical significant difference  $p$  value of 0.016 and 0.005, respectively. Signifying their inability to regulate their emotions in comparison to controls.

$NS$  = non-significant,  $S$  = significant

#### **D. Personality Disorders determined by SCID-II**

Moving to personality assessment cases appeared to have paranoid, schizotypal, schizoid, borderline, narcissist, and antisocial personality disorders. Moreover, statistical significant difference regarding having multiple personality disorders ( $P < 0.001$ ). As shown in Table 4.

#### **Association between alexithymia and different variables among case group**

According to the following Tables 5, 6, and 7, there was no statistically significant association between alexithymia and sociodemographic neither with emotion regulation nor with personality disorders among cases with ( $p < 0.05$ ).

**Table 1** Sociodemographic data of cases and controls

		Cases (n = 30)		Control (n = 30)		Test of sig.		
		N	%	N	%	Test	p value	sig.
Age	18–25	12	40.0%	9	30.0%	$\chi^2 = 1.94$	0.378	NS
	26–35	11	36.7%	9	30.0%			
	36–45	7	23.3%	12	40.0%			
Marital status	Single	6	20.0%	14	46.7%	Fisher exact test	0.018	S
	Married	15	50.0%	15	50.0%			
	Divorced	6	20.0%	1	3.3%			
	Widow	3	10.0%	0	0.0%			
Education	Illiterate	7	23.3%	0	0.0%	Fisher exact test	< 0.001	S
	Primary	6	20.0%	0	0.0%			
	Preparatory	6	20.0%	1	3.3%			
	Secondary	4	13.3%	1	3.3%			
	Technical	7	23.3%	15	50.0%			
	University	0	0.0%	13	43.3%			
Employment	Unemployed	22	73.3%	2	6.7%	Fisher exact test	< 0.001	S
	Regular job	1	3.3%	28	93.3%			
	Irregular job	7	23.3%	0	0.0%			
Type of work	NA	22	73.3%	2	6.7%	Fisher exact test	< 0.001	S
	Manual	6	20.0%	8	26.7%			
	Skilled	2	6.7%	15	50.0%			
	Semi-skilled	0	0.0%	1	3.3%			
	Professional	0	0.0%	4	13.3%			
F.H drug abuse	Negative	13	43.3%	25	83.3%	$\chi^2 = 10.34$	0.001	S
	1st degree relative	17	56.7%	5	16.7%			
F.H mental illness	Negative	25	83.3%	26	86.7%	Fisher exact test	1	NS
	1st degree relative	5	16.7%	4	13.3%			

NS non-significant, S Significant

**Table 2** Comparison between cases and controls as regard alexithymia total and subscales

Variable		Cases (n = 30)		Control (n = 30)		Chi square test		
		N	%	N	%	$\chi^2$	p value	sig.
Alexithymia	No Alexithymia	0	0.0%	13	43.3%	21.22	< 0.001	S
	Moderate alexithymia	5	16.7%	8	26.7%			
	Severe Alexithymia	25	83.3%	9	30.0%			
		Cases (n = 30)		Control (n = 30)		t test		
		Mean	SD ±	Mean	SD ±	T	p value	sig.
Difficulty identifying feelings		24.4	3.9	18.3	6.1	- 4.639	< 0.001	S
Difficulty describing feelings		17.7	2.7	14.9	3.5	- 3.536	0.001	S
Externally oriented thinking		23.9	3.1	21.5	3.8	- 2.675	0.010	S

NS = non-significant, S = Significant

**Discussion**

Substance abuse remarkably showed different rates in sex predominance across various studies that were either carried on the context of general population or on the

level of treatment settings, demonstrating men predominance. However, this notion changed by the results of the newly epidemiologic surveys suggesting that gap between male and females has narrowed in recent years [11]. The

**Table 3** Comparison between cases and controls as regards TMMS variables

	Cases (n = 30)		Control (n = 30)		t test		
	Mean	SD ±	Mean	SD ±	T	p value	sig.
Attention to feeling	34.9	4.7	36.6	5.0	1.406	0.165	NS
Clarity of feeling	33.5	4.3	36.4	3.4	2.945	0.005	S
Repair mood	17.2	3.6	17.3	2.5	0.168	0.867	NS
TMMS total score	85.2	8.2	90.3	7.8	2.480	0.016	S

**Table 4** Comparison between cases and controls as regards personality disorder using SCIDII.

	Cases (n = 30)		Control (n = 30)		Test of sig.			
	N	%	N	%	Test	p value	sig.	
Avoidant	13	43.3%	6	20.0%	$\chi^2 = 3.774$	0.052	NS	
Dependent	7	23.3%	2	6.7%	Fisher exact test	0.145	NS	
Obsessive	12	40.0%	10	33.3%	$\chi^2 = 0.287$	0.592	NS	
Paranoid	20	66.7%	10	33.3%	$\chi^2 = 6.667$	0.01	S	
Schizotypal	10	33.3%	1	3.3%	$\chi^2 = 9.017$	0.003	S	
Schizoid	14	46.7%	4	13.3%	$\chi^2 = 7.937$	0.005	S	
Histrionic	5	16.7%	1	3.3%	Fisher exact test	0.195	NS	
Narcissist	22	73.3%	10	33.3%	$\chi^2 = 9.643$	0.002	S	
Borderline	22	73.3%	8	26.7%	$\chi^2 = 13.067$	<0.001	S	
Antisocial	13	43.3%	0	0.0%	$\chi^2 = 16.596$	< 0.001	S	
Personality disorder	No personality disorder	0	0.0%	11	36.7%	Fisher exact test	< 0.001	S
	Single personality disorder	2	6.7%	6	20.0%			
	Multiple personality disorders	28	93.3%	13	43.3%			

NS = non-significant, S = significant

World Health Organization stated that around one-third of individuals with drug dependence are child-bearing women [22]. Hence, we find it important to give more attention to women with substance related problems and investigating their characteristics regarding alexithymia, emotion regulation, and personality disorders in comparison to matched healthy females.

The current study found that in comparison to control, 73.3% of the cases were unemployed and 23.3% with irregular job. This finding is consistent with [6, 23, 24] studies. This explained by the fact that unemployment makes the person more prone to drug abuse and the other side the impact of substance on the addicts rendering them incapable to work or maintain a job.

The study found that the less educated cases were more common to use opiates, and this is similar to Hamdi et al. [25] who found users of substance were illiterate persons and graduated from either primary or preparatory school. These results may support the assumptions that education is a protective factor from substance abuse which is confirmed by both the National Addiction Research Program among women in Cairo [26] finding the prevalence

of substance use is significantly lower among females that received higher education and the longitudinal studies uncovering the fact that dropping out of either high school or college is associated with a higher risk of substance abuse in adulthood [27].

On the contrary, a survey conducted in India found that women with substance abuse represented in their study were single, educated, employed, and involved unsafe practices such as sex and sharing syringe [28]. This difference might be explained by culture differences.

The finding of our study was also inconsistent with previous results by Mobasher et al.'s research about spirituality in relation to substance dependence recovery, where the percentage of substance dependence in university graduated adults was higher than other educational levels [29]. Similarly, Abolmaged et al. found the university education grade was the most prevalent in their substance abuse sample, followed by secondary and technical schools education [30].

The inconsistency may be explained by the difference in sample recruitment as most of their participants were enrolled from private mental hospitals, exhibiting higher

**Table 5** The association between alexithymia and socio-demographic among cases

Among cases		Moderate alexithymia (n = 5)		Alexithymia (n = 25)		Fisher exact test	
		N	%	N	%	p value	sig.
Age	18–25	2	16.7%	10	83.3%	0.317 <sup>(MC)</sup>	NS
	26–35	3	27.3%	8	72.7%		
	35–45	0	0.0%	7	100.0%		
Marital status	Single	2	33.3%	4	66.7%	0.808 <sup>(MC)</sup>	NS
	Married	2	13.3%	13	86.7%		
	Divorced	1	16.7%	5	83.3%		
	Widow	0	0.0%	3	100.0%		
Education	Illiterate	0	0.0%	7	100.0%	0.089 <sup>(MC)</sup>	NS
	Primary	0	0.0%	6	100.0%		
	Preparatory	3	50.0%	3	50.0%		
	Secondary	1	25.0%	3	75.0%		
	Technical	1	14.3%	6	85.7%		
Employment	Unemployed	4	18.2%	18	81.8%	1 <sup>(MC)</sup>	NS
	Regular job	0	0.0%	1	100.0%		
	Irregular job	1	14.3%	6	85.7%		
Type of work	NA	4	18.2%	18	81.8%	0.213 <sup>(MC)</sup>	NS
	Manual	0	0.0%	6	100.0%		
	Skilled	1	50.0%	1	50.0%		
F.H drug abuse	Negative	2	15.4%	11	84.6%	1	NS
	1st degree relative	3	17.6%	14	82.4%		
F.H mental illness	Negative	5	20.0%	20	80.0%	0.556	NS
	1st degree relative	0	0.0%	5	100.0%		

MC Monte Carlo method, NS non-significant, S significant

**Table 6** Association between alexithymia and emotion regulation among cases

Among cases	Moderate alexithymia (n = 5)		Alexithymia (n = 25)		t test		
	Mean	SD	Mean	SD	t	p value	Sig.
Attention to feeling	33.2	4.0	35.2	4.9	− 0.857	0.399	NS
Clarity of feeling	33.8	5.8	33.4	4.1	0.185	0.854	NS
Repair mood	17.4	2.1	17.2	3.8	0.135	0.893	NS
TMMS total score	84.4	7.3	85.3	8.5	− 0.224	0.824	NS

NS non-significant, S significant

socioeconomic and educational levels and ours from governmental hospital.

56.7% of cases had family members with substance use history. This finding was replicated in many studies [31–33]. Corroborated with the literature stating that more than 50% of the substance abuse is related to genetic factors [34].

Females in the current study mainly used heroin 43.3%, followed by poly substance including opiate, tramadol or both as main substance 33.3%. The high percentage of heroin may be related to the possibility that the patients

using heroin tends to be admitted more in hospital. At the same time, the other cases who had alternating periods of using tramadol with heroin or use tramadol only can be explained by a study indicating that women who inject heroin are more likely than their male counterparts to also use prescription drugs [35]. And also another research suggesting that females tend to use heroin in smaller amounts and for less period of time and are less likely than men to inject heroin [36].

Studies have shown that excessive levels of alexithymia are connected with a wide variety of psychosomatic

**Table 7** Association between alexithymia and personality disorders

Among cases		Moderate alexithymia		Alexithymia		Fisher exact test	
		N	%	N	%	p value	sig.
Avoidant	No	3	17.6%	14	82.4%	1	NS
	Yes	2	15.4%	11	84.6%		
Dependent	No	5	21.7%	18	78.3%	0.304	NS
	Yes	0	0.0%	7	100.0%		
Obsessive	No	4	22.2%	14	77.8%	0.622	NS
	Yes	1	8.3%	11	91.7%		
Paranoid	No	2	20.0%	8	80.0%	1	NS
	Yes	3	15.0%	17	85.0%		
Schizotypal	No	3	15.0%	17	85.0%	1	NS
	Yes	2	20.0%	8	80.0%		
Schizoid	No	5	31.3%	11	68.8%	0.045	NS
	Yes	0	0.0%	14	100.0%		
Histrionic	No	4	16.0%	21	84.0%	1	NS
	Yes	1	20.0%	4	80.0%		
Narcissist	No	2	25.0%	6	75.0%	0.589	NS
	Yes	3	13.6%	19	86.4%		
Borderline	No	2	25.0%	6	75.0%	0.589	NS
	Yes	3	13.6%	19	86.4%		
Antisocial	No	2	11.8%	15	88.2%	0.628	NS
	Yes	3	23.1%	10	76.9%		
Personality	Single Personality	0	0.0%	2	100.0%	1.000	NS
	Multiple Personality	5	17.9%	23	82.1%		

NS non-significant, S significant

disorder and psychiatric disorders [37]. Among psychiatric disorders, substance dependence has attracted much attention as people with unreasonable emotional distress are more vulnerable to use drugs and alcohol [38]. This could explain the reason for the use of opioid among females in the present study as they all showed variable degrees of alexithymia with the mean of the three subcomponent of alexithymia scores were significantly higher than control female group.

These findings are consistent with results of [39–42]. To explain the reason, it can be concluded that people with alexithymia misinterpret the experienced physical symptoms occurring during arousal from their emotional distress as a medical problem and became so concerned about it and seek measures just for treating their physical symptom by using psychoactive drugs as way of self-medication [43]. We did not find studies opposing our findings as most studies and data agreed that alexithymia is a pre-existing trait that make individuals prone to substance use. And it also may interfere with treatment success, as inability of addicts to recognize and describe emotional states, impede their ability to regulate these states or notice their relationship to initiation or maintenance of drug use [44].

For these reasons, the current study tried to find association between alexithymia and different variables that might contribute to its presence. Surprisingly, we did not find any significant association between alexithymia and different sociodemographic variables; however, this was in agreement with [41, 45]. Similarly, in spite of the evidences suggesting the potential relation between alexithymia and emotion regulation difficulties where the ability to identify and understand emotions is an important component of both alexithymia and emotion regulation [46] no significant association between alexithymia and Trait Meta Mood scale of emotion regulation was found consistent with [45, 47]. This could be linked to the differences endorsed in the other components of emotion regulation (e.g., the capability in controlling impulsive behavior, the appropriate use of strategies in regulation of emotion) which seemed to be far from alexithymia and thus it is likely that both constructs might be greatly independent [46]. Also, no statistically significant association between alexithymia and personality disorders was shown which in line with [48]; yet, Psederska et al. [49] found alexithymia was strongly associated with psychopathy and suggested that alexithymia may be one potential mechanism linking psychopathy with opioid use

disorders. Hence, these findings might signify that alexithymia by itself may contribute to substance dependence as it is associated with anhedonia, negative affect [50], and with impairments in emotion processing which all considered as risk factors predisposing to substance abuse [51].

Scores of TMMS showed impairment in emotional regulation among the cases group with decrease in their abilities to understand and discriminate their emotions. This was in line with the findings of [45, 52]. Yet, Magd et al.'s study showed that women with borderline without substance abuse has no statistical difference in emotional regulation than women with substance dependence, and they explained their abuse problem related to the presence of antisocial personality [53].

Linehan et al. found that emotion dysregulation is positively related with substance use [54]. This relation can be explained by Bornovalova et al. reporting the lack of emotional clarity leads people to the use substance as they believe it has an emotional regulatory function [55]. Moreover, Garland et al. found in their study, most of their cases in comparison to control abused opioid as a way to treat their negative emotions [56]. Hence, substance use act as a coping strategy used to deal with emotional distress by alleviating aversive emotions replacing them with positive ones.

A plethora of studies suggest that the prevalence of PD is higher among patients with substance use disorders (SUDs) compared to the general population [57–59] especially for those diagnosed as having antisocial, borderline, avoidant, and paranoid PD. With 12-fold more risk of SUD among PD [60]. Consistent with types of PDs reported in the literature using the SCID-II, the current study showed that females with opioid use disorder mainly diagnosed as having narcissistic, borderline, and paranoid disorder with percentage of 73.3%, 73.3%, and 66.7% respectively. With lesser percentage diagnosed as having schizotypal, schizoid, and antisocial personality disorders compared to the controls. Moreover, 93.3% of cases reported as having multiple personality disorders.

Similarly, Morgenstern et al. [61] found that borderline followed by paranoid and avoidant were the prevalent PDs among women. Also, Okasha et al.'s study found the most common PD in patients with substance use disorder were paranoid PD, obsessive PD, antisocial PD, and borderline PD [52]. However, other studies found the most common personality disorders among patients were borderline and antisocial [62, 63]. This difference may be because some of these studied included both genders not only females as in the current study.

The reasons for these findings is explained by the fact that PD and SUD are causally interlinked. Different causal pathways have been hypothesized explaining this

link among which three pathways: the behavioral disinhibition, the stress-reduction, and the reward-sensitivity pathway [58].

The behavioral disinhibition pathway account for the comorbidity between borderline personality disorder, antisocial personality disorders, and substance use in our study as the impulsivity, emotional dysregulation along with low level of harm avoidance, are associated with the higher risk of drug abuse among those personalities [58].

While stress-reduction pathway accounts for cluster A diagnosis among cases group, as they scored high on neuroticism, anxiety, and having unreasonable stress reactivity pushing them to use substances during stressful life events as a way of self-medication [58]. So, opioid dependence females with schizotypal personality disorder consume opioid to alleviate social anxieties and negative feelings commonly experienced by them. Similarly, those with paranoid personality use opioid as they seek its sedative effect which can diminish their anger and reduce the anxiety produced from their pervasive suspiciousness from people around them.

Lastly, the explanation for females with schizoid personality disorder usage of drug may be because they create a relationship with opioid drug, as it serve as a substitute for human relations, enhancing their internal life and allowing them to enjoy their own company more thoroughly as opioid help them to detach more from reality.

## Conclusions

The study investigated the characteristics of females who had received opioid use disorders diagnosis in Abassia Hospital compared to control. The study revealed that they are less educated and unemployed with positive family history of substance abuse. They are diagnosed with cluster A and B personality disorders. Moreover, all cases had alexithymia and emotional regulation problem. Also, there was no significant association between alexithymia, sociodemographic data, emotional regulation, and personality disorders among cases. Identifying these factors will help in tailoring the management and improving the outcome among these group of patients. At the same time, it will help to increase the awareness about the areas that need to be tackled as protective factors for reducing risks of having more future cases.

## Limitation

The current study is limited by small sample size. Furthermore, being a hospital-based study and not a community-based study may affect generalization of results.



### Abbreviations

PD : Personality disorder; SUD: Substance use disorder; TMMS: Trait Meta Mood Scale.

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### Authors' contributions

AH designed the work and reviewing the whole study findings. DS analyzed and interpreted the patient data regarding the dialysis. MM collecting the data done to the patients and analyzed them. RH analyzed and interpreted the patient data regarding and was a major contributor in writing the manuscript. All authors read and approved the final manuscript.

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### Availability of data and materials

All data generated or analyzed during this study are included in this published article.

### Declarations

#### Ethics approval and consent to participate

The procedure of the study and the design were accepted and validated by the ethical committee of Ain Shams University, Cairo, Egypt. Informed consent was given by the participants.

#### Consent for publication

The participants gave consent for using their data in publication.

#### Competing interests

The authors declare that they have no competing interests.

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### References

- Degenhardt L, Charlson F, Mathers B et al (2014) The global epidemiology and burden of opioid dependence: results from the global burden of disease 2010 study. *Addiction*. Aug;109(8):1320-33. <https://doi.org/10.1111/add.12551>. Epub 2014 Apr 24. PMID: 24661272.
- Schmidt C, Klee L, Ames G (1990) Review and analysis of literature on indicators of women's drinking problems. *British Journal of Addiction*. 85:179–192. <https://doi.org/10.1111/j.1360-0443.1990.tb03069>
- Wilsnack SC, Wilsnack RW, Hiller-Sturmhöfel S (1994) How women drink: epidemiology of women's drinking and problem drinking. *Alcohol health and research world*. 18(3):173–181
- Ashley OS, Marsden ME, Brady TM (2003) Effectiveness of substance abuse treatment programming for women: a review. *Am J Drug Alcohol Abuse*. 29(1):19–53. <https://doi.org/10.1081/ada-120018838> PMID: 12731680
- Webster LR (2017) Risk factors for opioid-use disorder and overdose. *Anesth Analg*. 125(5):1741-1748. <https://doi.org/10.1213/ANE.0000000002496>. PMID: 29049118.
- Bedene A, Lijfering WM, Niesters M et al (2019) Opioid prescription patterns and risk factors associated with opioid use in the Netherlands. *JAMA Netw Open*. 2(2(8):e1910223. doi: 10.1001/jamanetworkopen.2019.10223. PMID: 31461149; PMID: PMC6716286.
- Axelrod SR, Perepletchikova F, Holtzman K et al (2011) Emotion regulation and substance use frequency in women with substance dependence and borderline personality disorder receiving dialectical behavior therapy. *Am J Drug Alcohol Abuse*. 37(1):37-42. doi: 10.3109/00952990.2010.535582. Epub 2010 Nov 22. PMID: 21091162; PMID: PMC3052760.
- Cook DR (1991) Shame, attachment, and addictions: implications for family therapists. *Contemporary Family Therapy: An International Journal*. 13(5):405-419. <https://doi.org/10.1007/BF00890495>
- Gibbie TM, Hides LM, Cotton SM et al (2011) The relationship between personality disorders and mental health, substance use severity and quality of life among injecting drug users. *Med J Aust*. 195(3):S16–S21
- Arnevik EP, Wilberg TMDP, Urnes ØMD et al (2010) Psychotherapy for personality disorders: 18 months' follow-up of the Ullevål personality project. *J Personal Disord*. 24(2):188–203
- Anker JJ, Carroll ME (2011) Females are more vulnerable to drug abuse than males: evidence from preclinical studies and the role of ovarian hormones. *Curr Top Behav Neurosci*. 8:73–96. [https://doi.org/10.1007/7854\\_2010\\_93](https://doi.org/10.1007/7854_2010_93) PMID: 21769724
- First MB, Spitzer RL, Williams W et al (1995) Structured clinical interview for DSM-IV Axis I disorders (SCID I) in handbook of Psychiatry Measures. New York State Psychiatric Institute
- El Missiry A (2003) Homicide and psychiatric illness, An Egyptian Study. In MD thesis. Faculty of Medicine. Ain Shams University
- First MB, Gibbon M, Spitzer RL et al (1997) SCID-II Personality Questionnaire. American Psychiatric Press, Washington, DC
- Hatata H, Khalil A, Asaad T et al (2004) Dual diagnosis in substance use disorders. M.D. Degree thesis. Faculty of Medicine, Ain Shams University
- Goldberg DP, Hillier VF (1979) A Scaled Version of the General Health Questionnaire. *Psychol Med*. 9:139–145
- Okasha A (1988) Okasha's Clinical Psychiatry (Arabic Version of General Health Questionnaire) Anglo Egyptian Bookshop, Cairo
- Salovey P, Mayer JD, Goldman SL et al (1995) Emotional attention, clarity, and repair: Exploring emotional intelligence using the trait meta-mood scale. In: Pennebaker JW (ed) *Emotion, disclosure, and health*. APA, Washington, DC, pp 125–154
- Kafafi H, El Dawash M (2006) Trait meta mood scale for adolescents and adults. Egyptian Anglo library, Cairo
- Taylor GJ, Ryan D, Bagby RM (1986) Toward the development of a new self-report alexithymia scale. *Psychotherapy and Psychosomatics*. 44:191–199
- Askar M, Hashem A, Moussa S et al (1993) Psychometric evaluation of alexithymia. *Egypt J Psychiat* 16:77–84
- World Health Organization (2008) Principles of drug dependence treatment. World Health Organization, Geneva
- Abolmaged S, Koder A, Okasha T et al (2013) Tramadol use in Egypt: emergence of a major new public health problem. *Canadian J Addiction*. 4(1):5
- Colpaert K, Vanderplasschen W, Van Hal G et al (2008) Dual substance abusers seeking treatment: demographic, substance-related, and treatment utilization characteristics. *J Drug Issues*. 38:559–583
- Hamdi E, Gawad T, Khoweiled A et al (2013) Lifetime prevalence of alcohol and substance abuse in Egypt: a community survey. *Substance Abuse* 34:97–114
- Hamdi E, Sabry N, Khoweiled A et al (2013) The National Addiction Research Program: prevalence of alcohol and substance use among women in Cairo. *Egypt J Psychiatry*. 34:155–163
- American Society of Addiction Medicine (ASAM) (2003) Principles of addiction medicine. 3rd ed. p. 25.
- Murthy P (2002) Drug misuse causes major problems for women in India. *BMJ*. 11;324(7346):1118. <https://doi.org/10.1136/bmj.324.7346.1118/f>.
- Mobasher M, Khoweiled A, Gwali T, Mekawi S (2006) Spirituality in relation to addiction recovery. *Egyptian J Psychiatry* 43:21–30
- Abolmagd SF, Kamal SA, Rakhawy M, Mamdouh R (2007) Assessment of therapeutic factors of group psychotherapy in a sample of opiates addicts [MD Thesis]. Psychiatry Department, Cairo University, Cairo
- Qureshi M, Al-Habeeb M (2000) Socio-demographic parameters and clinical pattern of drug abuse in Al-Qassim region - Saudi Arabia. *Arab J Psychiatry*. 11:10–21
- Dodge K, Potocky M (2000) Female substance abuse characteristics and correlates in a sample of inpatient clients. *J. Substance Abuse Treatment*. 18(1):59–64

33. Ghanem M, Gadallah A, Meky A et al (2010) National survey of prevalence of mental disorders in Egypt: Preliminary survey. *East Mediterr Health J*. 15:65–75
34. Juli G, Juli L (2015) Genetic of addiction: common and uncommon factors. *Psychiatr Danub*. Sep;27 Suppl 1:S383-90. PMID: 26417801.
35. Gjersing L, Bretteville-Jensen AL (2014) Gender differences in mortality and risk factors in a 13-year cohort study of street-recruited injecting drug users. *BMC Public Health*. 14:440. <https://doi.org/10.1186/1471-2458-14-440>
36. Powis B, Griffiths P, Gossop M, Strang J (1996) The differences between male and female drug users: community samples of heroin and cocaine users compared. *Subst Use Misuse*. 31(5):529–543
37. Espina A (2003) Alexithymia in parents of daughters with eating disorders its relationship with psychopathological and personality variables. *J Psychosom Res*. Dec;55(6):553-60. [https://doi.org/10.1016/s0022-3999\(03\)00016-3](https://doi.org/10.1016/s0022-3999(03)00016-3). PMID: 14642987.
38. Tschann JM, Adler NE, Irwin CE et al (1994) Initiation of substance use in early adolescence: the roles of pubertal timing and emotional distress. *Health Psychology*. 13(4):326
39. Lindsay J, Ciarrochi J (2009) Substance abusers report being more alexithymic than others but do not show emotional processing deficits on a performance measure of alexithymia. *Addiction Research and Theory*. 17(3):315–321
40. Hamidi S, Rostami R, Farhoodi F et al (2010) A study and comparison of Alexithymia among patients with substance use disorder and normal people. *Procedia-Social and Behavioral Sciences*. 5:1367–1370
41. Ghalehban M, Besharat MA (2011) Examination and comparison of alexithymia and self-regulation in patients with substance abuse disorder and normal individuals. *Procedia-Social and Behavioral Sciences*. 30:38–42
42. Moselm A, HaghShenas M, Zamirinejad S et al (2016) Investigating the difference of alexithymia between addicted and non-addicted women. *International Journal of Humanities and Cultural Studies*. 2(2):705–713
43. Taylor GJ, Parker JD, Bagby RM et al (1992) Alexithymia and somatic complaints in psychiatric out-patients. *Journal of Psychosomatic Research*. 36(5):417–424
44. Morie KP, Yip SW, Nich C, Hunkele K, Carroll KM, Potenza MN (2016) Alexithymia and addiction: a review and preliminary data suggesting neurobiological links to reward/loss processing. *Current addiction reports*. 3(2):239–248. <https://doi.org/10.1007/s40429-016-0097-8>
45. El-Rasheed AH, ElAttar KS, Mahmoud DA et al (2017) Mood regulation, alexithymia, and personality disorders in adolescent male addicts. *Addictive Disorders and Their Treatment*. 16(2):49–58
46. Pandey R, Saxena P, Dubey A (2011) Emotion regulation difficulties in alexithymia and mental health Europe's. *J Psychol* 7(4):604–623. <https://doi.org/10.5964/ejop.v7i4.155>
47. Robert A, Dvorak C, Anne Day A (2014) Marijuana and self-regulation: examining likelihood and intensity of use and problems;39(3):709–712
48. Honkalampi K, Koivumaa-Honkanen H, Lehto SM, Hintikka J, Haatainen K, Rissanen T et al (2010) Is alexithymia a risk factor for major depression, personality disorder, or alcohol use disorders? A prospective population-based study. *Journal of Psychosomatic Research* 68(3):269–273
49. Psederska E, Savov S, Atanassov N, Vassileva J (2019) Relationships between alexithymia and psychopathy in heroin dependent individuals. *Front Psychol*. Oct 9;10:2269. doi: 10.3389/fpsyg.2019.02269. PMID: 31649591; PMCID: PMC6794427.
50. Honkalampi K, Hintikka J, Tanskanen A, Lehtonen J, Viinamaki H (2000) Depression is strongly associated with alexithymia in the general population. *J Psychosom Res*. 48(1):99–104
51. Wise RA, Koob GF (2014) The development and maintenance of drug addiction. *Neuropsychopharmacology* 39:254–262. <https://doi.org/10.1038/npp.2013.261>
52. Okasha T (2016) Emotional regulation, impulsivity and personality profile among an Egyptian sample of patients with substance use disorder. *Ain Shams University. z*, Unpublished paper for MD degree
53. Magd SA, Rakhaway M, Mamdouh R, Shaheen S. Impulsivity, suicidality, and emotional dysregulation in women having borderline personality disorder with and without substance dependence. *Egypt J Psychiatr [serial online]* 2019 [cited 2022 May 14];40:59-63.
54. Linehan MM, Dimeff LA, Reynolds SK et al (2002) Dialectical behavior therapy versus comprehensive validation plus 12-step for the treatment of opioid dependent women meeting criteria for borderline personality disorder. *Drug Alcohol Depend*. 67:13–26
55. Bornovalova MA, Ouimette P, Crawford AV et al (2009) Testing gender effects on the mechanisms explaining the association between post-traumatic stress symptoms and substance use frequency. *Addictive Behaviors*. 34:685–692
56. Garland A, Farb B, Goldin A et al (2015) Low dispositional mindfulness predicts self-medication of negative emotion with prescription opioids. *J Addict Med*. Jan-Feb;9(1):61-67. <https://doi.org/10.1097/ADM.000000000000090>. PMID: 25469652; PMCID: PMC4310788.
57. Brooner RK, King VL, Kidorf M et al (1997) Psychiatric and substance use comorbidity among treatment seeking opioid abusers. *Arch Gen Psychiatry*. 54:71–80
58. Verheul R (2001) Co-morbidity of PD in individuals with substance use disorders. *Eur Psychiatr*. 16:274–282
59. Landheim AS, Bakken K, Vaglum P (2003) Gender differences in the prevalence of symptom disorders and personality disorders among poly-substance abusers and pure alcoholics. *Eur Addict Res*. 9:8–17
60. Trull TJ, Jahng S, Tomko RL et al (2010) Revised NESARC personality disorder diagnoses: Gender, prevalence, and comorbidity with substance dependence disorders. *J Pers Disord*. 24:412–426
61. Morgenstern J, Langenbucher J, Labouvie E et al (1997) The comorbidity of alcoholism and personality disorders in a clinical population: prevalence rates and relation to alcohol typology variables. *J Abnorm Psychol*. 106(1):74–84
62. Yang M, Liao Y, Wang Q et al (2015) Profiles of psychiatric disorders among heroin dependent individuals in Changsha, China. *Drug and alcohol dependence*. 149:272–279
63. Bassiony M, Youssif M, Hussein A et al (2016) Psychiatric comorbidity among Egyptian patients with opioid use disorders attributed to tramadol. *J Addict Med*. 10:262–268

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