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Gender-related romantic attachment and serum oxytocin level difference in adult patients with obsessive compulsive disorder

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Abstract

Background: Given the scarcity of data on gender-related romantic attachment changes and the potential role of oxytocin (OT) in the pathophysiology of obsessive-compulsive illness (OCD), the current study aimed to assess gender-related differences in romantic attachment characteristics and their relationship to serum oxytocin in a set of forty OCD cases compared with a similar group of healthy controls. Simultaneously examining the gender differences in serum oxytocin levels in OCD patients, the diagnosis of OCD patients was determined using DSM-5 criteria, and the severity of OCD was determined using the Y-BOCS rating scale. All of the patients were drug-free and not depressed. The romantic attachment was assessed using the “Experiences in Close Relationship” Questionnaire. Standard ELISA kits were used to assess plasma OT levels.

Results: Regarding romantic attachments, patients with obsessive compulsive disorder scored higher on the anxiety and avoidance domains than controls with no significant gender difference. Serum oxytocin was higher in patients with OCD than in healthy controls, indicating a possible underlying pathophysiology of the illness. Also, there was a significant gender difference, with female patients having higher serum oxytocin and symptoms severity being negatively associated.

Conclusions: Taken together, these findings propose that OT may play a role in OCD pathophysiology with gender specificity. Also, OCD associated with insecure romantic attachment.

Keywords: Obsessive-compulsive disorder, Romantic attachment, Gender, Serum OT

Background

Obsessive compulsive disorder (OCD) is a mental health disorder characterized by obsessions (repeated and distressing thoughts, images, doubts, or urges) and compulsions and ritualistic mental or physical behaviors that an individual feels compelled to perform in order to relieve distress and/or prevent negative outcomes [1].

The neuropeptide oxytocin is involved in neurobehavioral processes. Oxytocin has been related to anxiety, other stress-related behaviors, and complex

socio-cognitive functions such as attachment, social exploration, and recognition [2]. Oxytocin has been related to OCD in several studies, and it may have a role in its pathophysiology [3].

The association between OT and attachment [4–6], and between OT and romantic attachment [7], as well as the inequalities in romantic attachment between obsessive male and female patients, are all considered risk factors for developing psychopathology in general [8–10], also, emphasized that oxytocin may play a role in OCD pathogenesis as well as romantic attachment in individuals with gender specificity [11].

The aim of this study was to compare serum oxytocin levels and romantic attachment in patients with obsessive compulsive disorder recruited from Fayoum University's

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psychiatric outpatient clinic to healthy controls, in order to investigate gender differences in serum oxytocin levels and romantic attachment among cases. In addition, the researchers wanted to find a relation between romantic attachment and oxytocin levels with other clinical characteristics.

Methods

This study is a case control, cross sectional study in the period from May 2019 to May 2020. Subjects consisted of two groups: Group A (patients group) consisted of forty patients with obsessive compulsive (20 males and 20 females) diagnosed according to the DSM-5 criteria, recruited from Psychiatry Outpatient Clinic, Fayoum University. Group B (control group) consisted of forty healthy control subjects matched in age, gender, and educational levels to the patients' group who were volunteers from paramedical staff of Fayoum University Hospital.

Participants were in the range from 21 to 50 years old and both male and female were included in the study. Patients were drug naïve/free psychiatric patients, while those with history of major depression disorder, endocrinal illness, history of hormonal replacement, pregnancy and lactation, or drug dependence or abuse were excluded from the study.

- 1- *Psychiatric assessment.* Both patients group and control group were evaluated using the semi-structured interview. Relevant data include socio demographic data, age at illness onset, duration of illness, and family history.
- 2- *Psychometric assessment.* Both patients group and control group were evaluated using Structured Clinical Interview based on DSM-5-RV (SCID-5-RV) [12] for diagnosis of obsessive-compulsive disorder. The Structured Clinical Interview for DSM-5 Personality Disorders (SCID-5-PD) [13] was used to exclude an axis II personality diagnosis. It is the updated version of the former Structured Clinical Interview for DSM-IV Axis II Personality Disorders (SCID-II) [14]. Yale-Brown Obsessive-Compulsive Scale [15] Arabic version [16] was used to specifically measure the types and severity of symptoms of OCD. Beck depression inventory [17] Arabic version [18] to exclude presence of any degrees of depressive disorders.

Experiences in Close Relationships Scale-Revised (ECR-R) [19] in Arabic language for romantic attachment. The ECR is a 36-item self-report attachment which is developed by Brennan et al. [20]. The items were derived from a factor analysis of most of the existing self-report measures of adult romantic attachment. The measure can be used to create two subscales, avoidance

(or discomfort with closeness and discomfort depending on others) and anxiety (or fear of rejection and abandonment) (approved for use online).

- 3- Biochemical measures to assess oxytocin level in both of patients group and control group.

The analysis of clinical chemistry parameter performed at the Department of Clinical Pathology. Venous samples were collected by a nurse from all participants by aseptic venipuncture, and the blood was then added to serum separator vacutainer tubes and within 30 min of collection centrifuged at a rate of 3000 rpm by a trained laboratory technician. The separated serum was harvested in Eppendorf tube and frozen till assay in -20 degrees centigrade. The measurement of oxytocin using commercially available enzyme-linked immune sorbent assay (ELISA) kit.

Ethical consideration

This study reviewed by the Faculty of Medicine Research Ethical Committee. The researcher informed the participants about the objectives of the study, the examination, the investigation done, and, also, the confidentiality of their information and their right not to participate in the study. Written informed consent obtained from all patients was included in the study.

Statistical analysis

Data collected and coded to facilitate data manipulation and double entered into Microsoft Access and data analysis performed using the Statistical Package of Social Science (SPSS) software version 22 in windows 7 [21]. Simple descriptive analysis in the form of numbers and percentages of qualitative data, and arithmetic means as central tendency measurement, standard deviations as a measure of dispersion of quantitative parametric data. Quantitative data included in the study first tested for normality by one-sample Kolmogorov-Smirnov test in each study group and then inferential statistic tests were selected. For quantitative parametric data, independent samples *t* test was used to compare quantitative measures between two independent groups. For quantitative non parametric data, Mann-Whitney test was used to compare two independent groups. For qualitative data, Chi-square test was used to compare between two of more than two qualitative groups, bivariate Pearson correlation test was used to test the association between variables, Spearman correlation test was used to test the association between quantitative non-parametric variables, and multiple linear regressions were used to test the association between quantitative dependent and independent

variables and to detect risk factors. The P value < 0.05 was considered as statistically significant.

Results

There was no statistically significant difference with P value > 0.05 between cases and controls as regards age, education years, and marital status. The mean age of onset of OCD was 23.8 ± 6.3 years, and with the mean duration of OCD was 4.9 ± 2.5 years. As regard family history of OCD patients, 27.5% of them had a positive history of psychological disease versus 72.5% of them had a negative family history (Table 1).

Cases had a mean obsession severity score of 13.9 ± 1.5 , a mean compulsion severity score of 12.7 ± 1.5 , and a mean Y-BOCS total severity score of 26.5 ± 2.9 (Table 1).

When comparing romantic attachment in different study clusters, there remained a highly statistically important change in anxiety and avoidance score with P value 0.001 between cases and controls, with a higher mean score among cases.

Furthermore, there was a statistically important change amid the ratio of cases in the terrified ECR-R class and

the percentage of controls in the secure ECR-R category (Table 1).

When comparing oxytocin levels in different research groups, there was a statistically significant greater mean oxytocin level among cases, with a P value of 0.01 (Table 1).

The frequency of preoccupation and compulsion types among cases is depicted in Figs. 1 and 2 [2].

Contamination obsession was the most common preoccupation, followed by aggressive type (52.5% and 42.5%, respectively), and somatic obsession was the least common obsession (7.5%).

Cleaning was the most common compulsion, followed by repeating 50% and 42.5%, respectively, while hoarding/collecting type was the least common compulsion (10%).

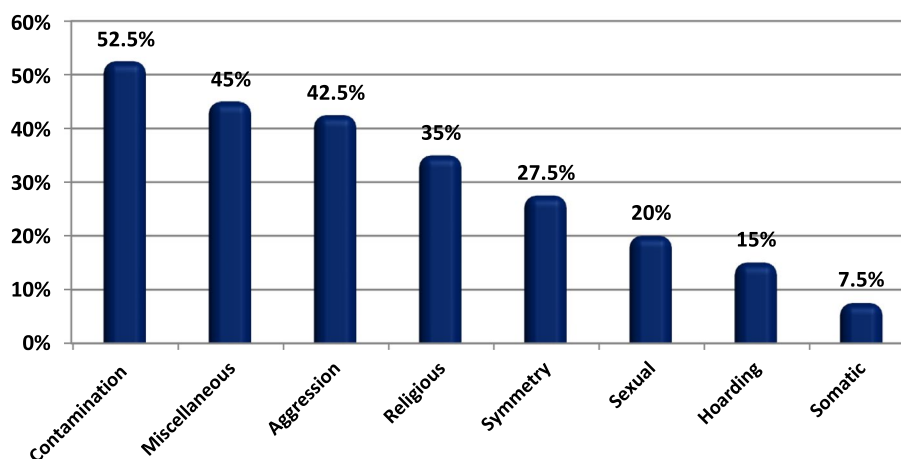
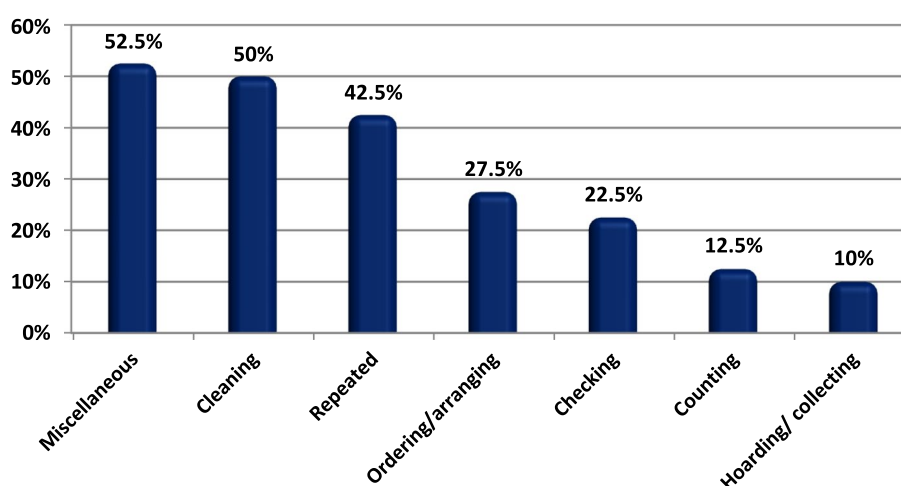
When the gender differences between cases were examined in terms of sociodemographic data, clinical features, oxytocin level, and romantic attachment, females had a statistically significant higher mean oxytocin level with a P value of 0.05.

On the other needle, there is no statistically major variance in other characteristics between both genders among instances with a P value > 0.05 (Table 2).

Table 1 Demographic data and clinical data in different study groups

Variables	Cases ($N = 40$)	Control ($N = 40$)	P value	Sig.
Age (years), mean/SD	28.8 ± 6.6	29.3 ± 6.2	0.75	NS
Education years (years, mean/SD)	12.1 ± 2.5	12.5 ± 2.01	0.55	NS
Marital status ($n = 40$)				
Single	15 (37.5%)	14 (35%)	0.9	NS
Married	25 (62.5%)	26 (65%)		
Variables ($n = 40$)	Mean \pm SD	Range		
Age of onset (years)	23.8 ± 6.3	14-38		
Illness duration (years)	4.9 ± 2.5	1-11		
Family history				
Negative	29	72.5%		
Positive	11	27.5%		
Severity of obsessive-compulsive disorder	Mean \pm SD	Range		
Obsession severity score	13.9 ± 1.5	10-17		
Compulsion severity score	12.7 ± 1.5	9-15		
Y-BOCS severity (total score)	26.5 ± 2.9	19-32		
Mean scores of romantic attachment tests	Cases ($N = 40$)	Control ($N = 40$)	P value	Sig.
Anxiety score (mean \pm SD)	4.33 ± 0.29	3.52 ± 0.54	< 0.001	VHS
Avoidance score (mean \pm SD)	3.1 ± 0.29	2.7 ± 0.28	< 0.001	VHS
ECR-R categories	No (%)	No (%)	P value	Sig.
Fearful	22 (55%)	9 (22.5%)	< 0.001	VHS
Preoccupied	10 (25%)	5 (12.5%)		
Dismissing	5 (12.5%)	4 (10%)		
Secure	3 (7.5%)	22 (55%)		
Oxytocin level (pg/ml)	19.6 ± 22.6	8.5 ± 9.7	0.002	HS

Student T test, Chi-square test, Mann-Whitney test

Obsession types among cases**Fig. 1** Frequency of obsession types among cases**Compulsion types among cases****Fig. 2** Frequency of compulsion types among cases

In addition, there was no statistically major change in both fixation and compulsion types between genders among cases with a P value > 0.05 .

When examining the relationship between oxytocin levels and other disease criteria among cases, it was discovered that there is a highly statistically major negative relationship among oxytocin levels and each of obsession severity score, compulsion severity score, and Y-BOCS severity score, with a P value of 0.0001. This indicated that an increase in obsession severity score, compulsion severity score, and Y-BOCS severity score.

However, there is no statistically significant link between oxytocin level and other factors among instances with a P value > 0.05 (Table 3).

There was no statistically important link between anxiety and avoidance score of romantic attachment with other disease criteria among cases when the correlation between anxiety and avoidance score with other factors was examined (Table 4).

The explanatory power of distinct risk factors on anxiety scores of romantic attachments among cases was investigated using a linear regression model. The results

Table 2 Gender difference among cases as regarding sociodemographic data, clinical characteristics, oxytocin level and romantic attachment

Variables	Males (N = 20) Mean \pm SD	Females (N = 20) Mean \pm SD	P value	Sig.
Some demographic and clinical data				
Age (years)	29.7 \pm 7.1	28 \pm 6.1	0.4	NS
Education years (years)	12.1 \pm 2.2	12.2 \pm 2.8	0.9	NS
Age of onset (years)	24.4 \pm 6.8	23.3 \pm 5.8	0.6	NS
Illness duration (years)	5.3 \pm 2.7	4.7 \pm 2.4	0.5	NS
Family history				
	N(%)	N(%)		
Negative	15 (75%)	17 (70%)	0.9	NS
Positive	5 (25%)	6 (30%)		
OCD severity scores as regarding Y-BOCS (mean \pm SD)				
Obsession severity score	13.7 \pm 1.7	14.2 \pm 1.3	0.4	NS
Compulsion severity score	12.6 \pm 1.7	12.7 \pm 1.4	0.8	NS
Y-BOCS severity (total score)	26.2 \pm 3.3	26.9 \pm 2.6	0.5	NS
Romantic attachment as regarding the ECR-R				
Anxiety score	4.4 \pm 0.33	4.3 \pm 0.23	0.5	NS
Avoidance score	3.1 \pm 0.32	3.08 \pm 0.27	0.8	NS
ECR-R categories				
Fearful	11 (50%)	11 (50%)	0.8	NS
Preoccupied	4 (40%)	6 (60%)		
Dismissing	3 (60%)	2 (40%)		
Secure	2 (66.7%)	1 (33.3%)		
Mean oxytocin level (mean \pm SD)				
Oxytocin level (pg/ml)	11.4 \pm 17.6	27.9 \pm 24.4	< 0.001	VHS

Student T test, Mann-Whitney test, Chi-square test

Table 3 Correlation between oxytocin levels with other disease criteria among cases

Variables	Oxytocin level		
	r	P value	Sig.
Age (years)	0.05	0.8	NS
Education years (years)	0.08	0.6	NS
Age of onset (years)	0.05	0.7	NS
Illness duration (years)	-0.03	0.9	NS
OCD severity scores as regarding Y-BOCS			
Obsession severity score	-0.49	0.001	VHS
Compulsion severity score	-0.55	0.001	VHS
Y-BOCS severity (total score)	-0.53	0.001	VHS
Romantic attachment as regarding the ECR-R			
Anxiety score	0.21	0.2	NS
Avoidance score	0.31	0.06	NS

Bivariate Pearson correlation test, Spearman correlation test

show that there were no statistically important predictors with P values > 0.05 for any risk factors (Table 5).

The explanatory power of distinct risk factors on avoidance score of romantic attachment among cases was

studied by a linear relapse model. The results show that there were no statistically significant predictors with P values > 0.05 for all risk factors (Table 6).

Discussion

In this training, there was a statistically important change amid case and switch sets on the Skills in Near Affairs Scale-Revised (ECR-R) as a tool of romantic extra, per a P value of 0.05, in terms of anxiety and avoidance score, with a higher mean score among cases.

These findings corroborated those of Alcee [22] and Doron et al. [23] who found a link between adult attachment anxieties and obsessive compulsive disorder. In the later trial, here remained a statistically noteworthy change in attachment anxiety and attachment avoidance between the obsessive-compulsive disorder group and the control group.

Carpenter and Chung [24], Doron [25], and Pozza et al. [26] revealed that obsessive compulsive disorder was linked to attachment insecurities in previous investigations.

These findings were also in line with those of Van Leeuwen et al. [27] who showed an average to substantial

Table 4 Correlation between anxiety and avoidance score with other disease criteria among cases

Variables	Romantic attachment as regarding the ECR-R			
	Anxiety score		Avoidance score	
	<i>r</i>	<i>P</i> value (sig)	<i>r</i>	<i>P</i> value (sig)
Age (years)	−0.13	0.4 (NS)	0.25	0.11 (NS)
Education years (years)	0.06	0.7 (NS)	0.18	0.3 (NS)
Age of onset (years)	−0.13	0.4 (NS)	0.27	0.09 (NS)
Illness duration (years)	−0.04	0.8 (NS)	−0.002	0.9 (NS)
OCD severity scores as regarding Y-BOCS				
Obsession severity score	−0.15	0.4 (NS)	−0.19	0.2 (NS)
Compulsion severity score	−0.10	0.5 (NS)	−0.12	0.4 (NS)
Y-BOCS severity (total score)	−0.12	0.5 (NS)	−0.14	0.4 (NS)

Bivariate Pearson correlation test

Table 5 Multiple linear regression analysis to determine the risk factors of anxiety score among cases

Variables	<i>B</i>	<i>SE</i>	<i>Beta</i>	<i>P</i> value	<i>F</i> test (<i>P</i> value)
Constant	5.2	0.8	----	----	0.81 (0.6)
Age (years)	0.08	0.3	1.8	0.8	
Sex	−0.12	0.11	−0.22	0.3	
Marital status	−0.24	0.12	−0.41	0.07	
Education level (years)	−0.10	0.02	−0.15	0.5	
Family history	0.04	0.14	0.06	0.8	
Age of onset (years)	−0.08	0.35	−1.7	0.8	
Illness duration (years)	−0.08	0.34	−0.6	0.8	
Obsession severity score	−0.16	0.15	−0.8	0.3	
Compulsion severity score	−0.13	0.16	−0.8	0.4	
Y-BOCS severity (total score)	0.14	0.15	1.4	0.3	
Oxytocin level (pg/ml)	0.002	0.003	0.19	0.4	

Multiple linear regressions analysis

Table 6 Multiple linear regression analysis to determine the risk factors of avoidance score among cases

Variables	<i>B</i>	<i>SE</i>	<i>Beta</i>	<i>P</i> value	<i>F</i> test (<i>P</i> value)
Constant	1.6	0.7	----	----	1.3 (0.3)
Age (years)	−0.02	0.3	−0.5	0.9	
Sex	−0.06	0.1	−0.1	0.6	
Marital status	−0.003	0.1	−0.005	0.9	
Education level (years)	0.03	0.02	0.2	0.2	
Family history	0.2	0.14	0.3	0.1	
Age of onset (years)	0.05	0.3	1.1	0.9	
Illness duration (years)	−0.02	0.3	0.2	0.9	
Obsession severity score	−0.06	0.1	−0.3	0.7	
Compulsion severity score	−0.02	0.2	−0.1	0.8	
Y-BOCS severity (total score)	0.05	0.1	0.6	0.7	
Oxytocin level (pg/ml)	0.005	0.003	0.4	0.08	

Multiple linear regressions analysis

link amid timid part (both add-on worry and extra escaping) and OCD symptomatology in a meta-analysis study (in both patients with OCD and healthy subjects with OCD symptoms). (Though longer studies are wanted to establish causal conclusions, these findings complement developing OCD models that focus on attachment dysfunction.

According to Sookman et al. [28], OCD is distinguished from other anxiety disorders by a stronger awareness of personal vulnerability, difficulties with unpredictability, and a greater need for control. They also discovered that anxiety disorders in general are characterized by the perception of intense emotions as harmful and the inability to cope with them. One of the elements that contributes to perceived vulnerability and predisposes to OCD is insecure attachment.

This shows that attachment anxieties' contribution to OCD symptoms may be mediated by dysfunctional beliefs already linked to OCD, such as overestimation of threat, perfectionism, and beliefs about regulating thoughts [29]. Individuals with OCD may have high attachment anxiety, which can lead to hypervigilance for risk cues, which is consistent with this theory [30].

Attachment anxiety can raise the desire to act and activate dysfunctional cognitive processes after an undesirable intrusive thought occurs (e.g., negative self-appraisals, overestimation of threat, and perfectionism). As a result of these processes, the individual becomes extremely sensitive to intrusive thoughts or their assessments when they are related to sensitivity in specific self domains [29]. As a result, high levels of attachment anxiety may heighten awareness to intrusions and people's reactions to them, making them more vulnerable to OCD symptoms and cognitions.

In the current study, the mean serum oxytocin level was statistically significantly higher among cases group than control group with P value < 0.05 .

This finding was steady with those of Naesström et al. [31], Marazziti et al. [11], and Leckman et al. [32] who showed that oxytocin levels in obsessive compulsive disorder were significantly higher.

Furthermore, Humble et al. [33] discovered that patients with early-onset OCD had higher baseline serum oxytocin, and there were links between baseline oxytocin and OCD severity, as well as oxytocin changes and treatment response, bolstering theories that oxytocin is involved in OCD pathophysiology and that SRIs' anti-obsessive effects are partially exerted through oxytocin-ergic mechanisms.

Humble and Bejerot [34] investigated orgasm, serotonin reuptake shyness, and plasma oxytocin in patients with obsessive-compulsive sickness, and showed that baseline oxytocin level was positively connected with

baseline OCD severity, based on data from a remote randomized clinical trial. It is now clear that OT has an impact on a variety of functions and behaviors that may be linked to OCD symptoms.

The intracerebral OT injection causes a considerable increase in all grooming behavior [35] in animals, which is thought to be a model of cleaning compulsions [36, 37].

It is also linked to increased sexual activity and violent behavior against strangers, therefore it has been compared to sexual and hostile manias and/or forces [38, 39].

Furthermore, the regulation of multiple areas implicated OT can piece a hero in OCD via influencing the orbitofrontal cortex, caudate, and accumbens bases in the OCD circuit [40].

Given the evidence for the involvement of OT in OCD, the functional and useful relationship amid OT and 5-HT together with the CNS and the margin pathogenesis may be inextricably linked to that of 5-HT [41].

These findings, however, contradicted those of Altemus et al. [42] who investigated CSF oxytocin levels in patients with OCD and healthy control subjects and found no changes between the two groups. The disparities between these studies could be attributed to limited sample sizes, inherent differences in subjects, or various CSF collection periods.

The current study found no statistically important gender change in the age of onset of obsessive-compulsive disorder in different genders among cases, with a P value > 0.05 .

These answers were steady with persons of Lijster et al. [34] who discovered no sex changes in the stage of start of obsessive-compulsive disorder.

There was no statistically major gender change in the length of sickness in different genders among cases, with a P value > 0.05 .

These results were steady with those of Turna et al. [43] who found no gender differences in the duration of obsessive-compulsive disorder disease.

These findings were also similar to those of Tripathi et al. [44], who looked at gender differences in obsessive-compulsive disorder (findings from a multicentric research from India) and found no gender differences in terms of illness duration.

In this study, no statistically significant gender differences in family history were found among cases with a P value more than 0.05.

These findings were similar to those of Castle et al. [45] who investigated gender differences in obsessive compulsive disorder were discovered, with a history of OCD in a first degree relative (12% vs. 9% of males) and a family history of depression (15% vs. 10% of males) being slightly more common in female probands, but the differences were not statistically significant.

When Torresana et al. [46] looked at sex changes in obsessive-compulsive illness phenotypic manifestation, they found no statistically significant differences in family history (an exploratory study from Brazil).

In this education, here remained no statistically major gender change in preoccupation and compulsion severity as determined by the Y-BOCS total and subscales scores among cases (P value > 0.05).

These results were similar to those of Fischer et al. [47], Fontenelle et al. [48], Wheaton et al. [49], and Torresana et al. [46] who found no significant differences between sexes in the severity of OCD symptoms as judged by the Y-BOCS total and subscale scores.

There was no statistically significant gender difference in obsessive compulsive disorder symptoms between both genders among cases, with a P value > 0.05 in both preoccupation and compulsion categories.

These findings were in line with the findings of López-Solà et al. [50], Vivan et al. [51], and Raines et al. [52] who found no gender differences in OCD symptoms.

However, these findings were in contrast to prior research findings in which sex has been found to play an important role in the phenotypic expression of OCD [53–57]. One possible explanation for the divergent results is that one gender was more dominant in the study than the other [53].

In terms of gender differences in romantic attachment, there was no statistically significant gender difference between cases with a P value > 0.05 for both anxiety and avoidance scores.

These findings are consistent with those of Doron et al. [25] who observed no statistically significant difference in anxiety and avoidance scores in OCD between men and women.

In addition, Myhr et al. [58] looked at attachment security and parental bonding in individuals with obsessive compulsive disorder (in comparison to depressive outpatients and healthy controls) and found no gender differences in attachment security.

However, this is in contrast to Nedelisky et al. [59], who claimed that there was a significant gender difference in male and female attachment in obsessive compulsive disorder, and that this difference could be due to their small sample size and the fact that they used different scales in their study.

In the current investigation, there was no statistically significant gender difference in ECR-R categories among cases with a P value > 0.05 .

This was in line with the findings of Marazziti et al. [10] who looked examined romantic attachment in 126 individuals with mood and anxiety disorders and found that gender did not explain a substantial fraction of variance in the ECR-R categories in any of the research groups.

In terms of oxytocin levels, females had a statistically significant higher mean oxytocin level, with a P value of 0.05.

This was in line with the findings of Leckman et al. [32] who reported that females in OCD had considerably greater oxytocin levels than males.

Additionally, Epperson et al. [60] and Sichel et al. [61] discovered an increased risk of OCD during pregnancy and postpartum.

As a result, it appears that a minority of women (between 11 and 47%) is particularly sensitive to the start or aggravation of OCD following exposure to the high levels of OT typical of those times [62, 63].

In addition, Francis et al. [64] found that oxytocin receptor binding was increased in the central nucleus of the amygdala and the bed nucleus of the stria terminalis in adult females but not in adult males.

Based on previous research, Massey et al. [65] determined that females have higher oxytocin concentrations than males. CSF oxytocin concentrations [66] have yielded similar findings [67].

With a P value of 0.05, there is a statistically significant negative correlation between oxytocin level and each of obsession severity score, compulsion severity score, and Y-BOCS severity score in the current study, indicating that an increase in oxytocin level is associated with an increase in obsession severity score, compulsion severity score, and Y-BOCS severity score.

However, there was no statistically significant link between oxytocin level and other factors among instances with a P value > 0.05 .

These findings were comparable to those of Marazziti et al. [11] who discovered that The YBOCS total score was found to be adversely linked with OT levels, with lower OT concentrations indicating more severe symptoms.

Despite the fact that OT was measured in the CSF in this case, a positive connection was seen in a group of OCD patients, regardless of subtype [68], or just in non-tic-related OCD patients [69]. The discrepancy could be explained by the fact that the patients in this trial had never had any type of OCD treatment or cognitive-behavioral therapy, but those in the other investigations, despite a pharmacological washout period, was not medication naive/free.

However, it is worth emphasizing that OT is associated with overall severity rather than specific symptoms, which we believe is due to the stress associated with the disease. The link between anxiety/stress and occupational therapy has been well-documented [70–72].

Interestingly, increased plasma OT levels have been linked to emotional stress and strained social ties in both healthy [73] and anxious women [74].

Because the relationship between OT and anxiety appears to be positive in all of these conditions but negative in our OCD patients, we speculate with caution that increased OT appears to be essential for triggering and maintaining the stress/anxiety mechanism at the “right” level, a process that would not work properly in OCD patients [11].

There was no statistically significant link between anxiety and avoidance scores and other clinical characteristics when it came to romantic attachment (anxiety and avoidance scores), avoidance scores, and other variables among cases with a P value > 0.05 .

These findings were likewise in line with those of Myhr et al. [58], who found no statistically significant relationship between romantic attachment score and obsessive-compulsive disorder severity and other clinical factors.

Although Van Leeuwen et al. [27] discovered that attachment anxiety and avoidance had robust impact sizes in connection to OCD symptomatology, this supports an attachment-centered view of OCD. These findings further show that combining cognitive and attachment-based therapeutic methods to OCD may benefit patients who are experiencing treatment resistance due to developmental or emotional issues.

The linear regression model analysis was used in this study to investigate the explanatory power of different risk factors on anxiety and avoidance scores among cases. The results show that none of the risk factors were statistically significant predictors with P values > 0.05 .

These findings matched those of van Leeuwen et al. [27] who conducted a meta-analysis on attachment in OCD and found that none of the meta-regressions indicated a significant effect.

In addition, regression studies revealed no significant linear correlations between age and any of the attachment or parental bonding instrument (PBI) outcomes, according to Myhr et al. [58]. As a result, in the following analyses, age was not employed as a covariate.

Also, Nedelisky et al. [59] hoarding's impact on attachment relationship patterns, features, and security was explored, and it was discovered that neither gender nor hoarding significantly predicted any of the remaining romantic attachment security, pattern, or relationship feature subscales.

This study had a rather modest sample size, yet it is equivalent to many studies seeking to investigate variations in blood oxytocin levels between obsessive compulsive disorder patients and controls.

Furthermore, it is uncertain because the peripheral and central OT pools appear to be formed by different cells, peripheral OT reflects that observed in the CNS.

Despite the debate, evidence of simultaneous changes in OT levels in plasma and the brain supports the use of the peripheral marker as a mirror of the central marker.

Conclusions

Patients with obsessive compulsive disorder exhibited greater serum oxytocin levels than healthy controls, indicating a probable underlying pathophysiology of the condition. There was a significant gender difference, with female patients having higher serum oxytocin levels than male patients. There was also a substantial negative relationship between oxytocin levels and each of the obsession, compulsion, and Y-BOCS severity scores.

In all the anxiety and avoidance dimensions, patients with obsessive compulsive disorder scored higher on romantic attachment, but there was no significant gender difference.

Abbreviations

5-HT: Serotonin; BDI: Beck depression inventory; CSF: Cerebrospinal fluid; DSM-5: Diagnostic and Statistical Manual of Mental Disorders, fifth edition; ECA: Epidemiologic catchment area; ECR-R: Experiences in close relationships scale-revised; OCD: Obsessive compulsive disorder; OT: Oxytocin; OXTR: Oxytocin receptor; PTSD: Posttraumatic stress disorder; SCID-I: Structured clinical interview based on DSM-IV; Y-BOCS: Yale-Brown Obsessive Compulsive Scale.

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Authors' contributions

MA, SM, ZA, and MR analyzed and interpreted patient data using clinical and psychometric approaches, and all authors contributed to the composition of the study. All of the contributors have read and approved the final manuscript.

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Declarations

Ethics approval and consent to participate

This study was approved by the Ethics Committee of Fayoum University's Faculty of Medicine.

The study's subjects signed a written informed consent form.

It is impossible to determine how many permits are available.

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Consent for publication

Not valid.

Competing interests

The authors declare that they have no competing interests.

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