

# Comparison of cognitive functions and other clinical correlates in patients with schizophrenia with and without comorbid obsessive-compulsive disorder

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## Context

Schizophrenia is a serious and chronic mental disorder that includes a variety of cognitive, behavioral, and emotional symptoms, and it can be difficult to diagnose.

## Aims

To compare cognitive functions and psychotic parameters, the association of depressive symptoms, and the overall level of performance among individuals with schizophrenia only and individuals who had schizophrenia with comorbid obsessive-compulsive disorder (OCD).

## Settings and design

The study was conducted at the Neuropsychiatry Department and the Center of Psychiatry, Neurology, and Neurosurgery of Tanta University.

## Patients and methods

This study was carried out on 60 patients aged from 18 to 40 years who were able to read and write. Patients were subdivided into two equal groups: group 1 met the diagnosis of schizophrenia with OCD according to Diagnostic and Statistical Manual of Mental Disorders-IV criteria and group 2 fulfilled the diagnosis of schizophrenia according to Diagnostic and Statistical Manual of Mental Disorders-IV criteria. All cases were subjected to psychiatric interview, psychiatric symptom rating, neuropsychological assessment, and global assessment of functioning.

## Statistical analysis

SPSS v25 was used to perform the statistical analysis.

## Results

Patients who had schizophrenia with OCD showed a considerably greater score on Hamilton depression rating scale than patients with schizophrenia only ( $P=0.002$ ). Patients with schizophrenia only showed more negative symptoms than those who had schizophrenia with OCD ( $P=0.001$ ).

## Conclusions

Schizo-obsessive patients have better performance in all cognitive tests, showing higher levels of concentration and visuospatial functioning and better visual search speed, scanning, speed of processing, and abstract thinking. Moreover, they had higher levels of overall social and occupational functioning. Important clinical consequence of our work is that schizo-obsessive cases do not inevitably have a more severe disease with a potentially worse prognosis.

## Keywords:

clinical correlates, cognitive functions, comorbid obsessive-compulsive disorder, schizophrenic patients

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## Introduction

Schizophrenia is a serious and chronic mental disorder that includes a variety of cognitive, behavioral, and emotional symptoms, and it can be difficult to diagnose (American Psychiatric Association D, Association AP, 2013).

Obsessive-compulsive disorder (OCD) is a psychiatric condition in which people have undesirable and repeated thoughts, sensations, feelings, or behaviors

that cause the individual to feel compelled to act (Nestadt *et al.*, 2010). The analysis of OCD in individuals who had schizophrenia facilitates the administration of suitable psychiatric therapies for this population (Samiei *et al.*, 2016).

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In schizophrenia, the dorsolateral prefrontal cortex circuit and the orbitofrontal cortex circuit share similar physical substrates (Samiei *et al.*, 2016). The objective of this work was to compare cognitive functions and psychotic, the association of depressive symptoms, and the overall level of performance among individuals with schizophrenia only and individuals had schizophrenia with OCD.

Some valuable research work was done in Egypt to study cognitive aspects in patients with schizophrenia.

Khalil *et al.* (2020) performed a correlation of cognitive functions to symptom domains and insight in Egyptian patients with schizophrenia and revealed that cognitive impairment in patients with schizophrenia is most likely to underlie negative symptoms, general psychopathology symptoms, and poor insight. They suggested that treatment strategies minimizing these symptoms would improve cognitive impairment.

Another research was done in Ain Shams Institute of Psychiatry comparing cognitive functions in medication adherent and nonadherent patients with schizophrenia and revealed that cognitive deficits, especially verbal memory and executive functions, were the strongest patient-related factors associated with nonadherence to medication (Khalil *et al.*, 2020).

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### **Patients and methods**

This research was carried on a sample of 60 patients aged from 18 and 40 years who were able to read and write. An informed written consent was obtained from individuals or from their next of kin. The study was done after approval from the Ethical Committee of Tanta University Hospitals.

Exclusion criteria were individuals with comorbid organic brain disease, mental retardation, head injury, ever received electroconvulsive therapy, and substance dependence (except for tobacco).

Patients were subdivided into two equal groups: group 1 met the diagnosis of schizophrenia with comorbid OCD according to Diagnostic and Statistical Manual of Mental Disorders (DSM)-IV standards and group 2 fulfilled the diagnosis of schizophrenia according to DSM-IV standards.

All cases were subjected to psychiatric interview, psychiatric symptoms rating, neuropsychological assessment, and global assessment of functioning (GAF).

### **Psychiatric symptoms rating**

The patients were examined by the Yale-Brown Obsessive-Compulsive Scale (YBOCS), the Positive and Negative Syndrome Scale (PANSS), and the Hamilton depression rating scale (HDRS).

The Yale-Brown Obsessive-Compulsive Scale is a method for measuring the severity of OCD symptoms (Goodman *et al.*, 1989). In HDRS (also known as Ham-D), 17 symptoms of depression experienced within the past week are included in the original version. A restriction of the HDRS is that it does not assess atypical depressive symptoms (such as hyperphagia and hypersomnia), as it was originally designed for hospital inpatients. A score of 0–7 indicates normal range, whereas a score of at least 20 indicates at least considerable severity (Hamilton, 1980).

PANSS includes (a) a scale for assessment of positive symptoms (SAPS), (b) a scale for assessment of negative symptoms (SANS), and (c) a general psychopathology scale (Kay *et al.*, 1987).

The PANSS consists of 30 items, comprising seven items that constitute the SAPS, another seven constitute the SANS, and the residual 16 represent a general psychopathology scale. For each of these previous subscales, the psychiatric symptoms or signs were given score 1 (absent), 2 (minimal), 3 (mild), 4 (moderate), 5 (moderate-severe), 6 (severe), or 7 (extreme) (Kay *et al.*, 1987).

Neuropsychological assessment: all the participants were subjected to a comprehensive neuropsychological battery, and it was completed in an average of 60–90 min. Each case was given the same order of tests, and they were given breaks between tests to decrease the effects of fatigue. The battery included methods of executive functioning [Wisconsin card sorting test (WCST)], awareness and spatial-motor ability (trail-making test), orientation, memory, language, and visual-spatial skills [Mini-Mental State Examination (MMSE)], and global evaluation of performance scale.

The MMSE is a commonly used battery of cognitive function screening questions. The MMSE is significantly more sensitive than informal questioning or an overall impression of a case's orientation in detecting cognitive impairment (de Boer *et al.*, 2014).

Trail making is a neuropsychological examination of visual attention and task switching (Bowie and Harvey,

2006). In trail making test part A, the participant has to draw lines in ascending order between numbers from 1 to 25 (standard test sheet). The patient's test score is based on the number of seconds required to solve the problem. While the patient corrects his or her errors, the stopwatch continues to run. Trail making test part B is same as the part A, but the numbers from 1 to 13 and letters from A (Arabic letter Ø¸) to L (Arabic letter Ø³) are to be attached by varying between numbers and letters in ascending order. The score consists of time in seconds as in part A. The purpose of this section was to evaluate the divided attention and set shifting components of executive functions.

The computerized description of the WCST was derived from Psychology Experiment Building Language. The computerized WCST displays four stimulus 'cards' at the top of the screen and a response 'card' in the lower left corner. Every card has a variety of colors and figure counts. The objective of the WCST is to connect each response card with its appropriate stimulus card according to one of three sorting categories (Mueller, 2010).

Contributors answered by pushing the stimulus card that best matched their response. The contributor is unaware of the sorting category and must identify it based on performance comments provided by the machine. When a participant provides 10 consecutive right responses in a category, the category is judged complete, and the sorting category automatically changes to the next category. The examination concludes when the contributor has completed six categories or all 64 response cards.

The computer program generates several scores that can be used as performance indicators, involving the period of the test and the mean response period; the total number of completed categories, of trials (with a maximum of 64), and of trials required to accomplish the first category; and the total number and the percentage of desired replies and the total number and percentage of incorrect responses. Defects are further divided into perseverative and nonperseverative categories, and 'other responses.' In addition, the computer program gives data on perseverative responses (answers in the new category that were ordered by the prior sorting principle).

The number of instances in which a participant failed to preserve set is shown by receiving five or more right responses in a succession but failing to complete a category. Moreover, the mean number of trials to finish the first category or the total number of trials

required to finish successfully the first category is calculated.

Lastly, the percentage of conceptual level responses level is computed using only intentional correct responses and excluding random correct responses.

A mental disorder's severity is measured using the GAF scale. On a scale from 0 to 100, it measures the effect of a person's symptoms on daily living. The score can help determine the level of care a patient requires and the efficacy of potential treatments. The composition is divided into ten sections. They are called anchor points. The higher your score, the better you can perform daily tasks (Hagemeister and Westhoff, 2002).

#### Statistical analysis

SPSS v25 performed the statistical analysis (IBM Inc., Chicago, Illinois, USA). The same group's quantitative variables were presented as mean and SD and compared utilizing the paired Student *t* test. The qualitative variables were presented in terms of frequency and percentage (%). A *P* value of 0.05 with two tails was considered statistically significant.

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## Results

Age and sex were insignificantly different among both groups. The variation between both groups is statistically significant where patients of the second group showed no OCD as assessed by the Yale-Brown OCD scale (*P*=0.001).

Cases diagnosed with schizophrenia with comorbid OCD showed a considerably higher score in the HDRS than patients with schizophrenia only (*P*=0.002). Patients with schizophrenia only experience more conceptual disorganization, excitement, delusions, suspiciousness/persecution and hostility, and hallucinatory behavior, than those with comorbid OCD (*P*<0.05). Grandiosity showed a statistically insignificant difference between the two groups. Patients with schizophrenia only showed more positive symptoms than those with schizophrenia with comorbid OCD (*P*=0.001).

Patients with schizophrenia only show more blunted affect, poor rapport, emotional withdrawal, passive/apathetic social withdrawal, stereotyped thinking, spontaneity, better flow of conversation, and difficulty in abstract thinking than those with comorbid OCD (*P*=0.001). Cases with schizophrenia only showed more negative symptoms

than those with schizophrenia with comorbid OCD ( $P=0.001$ ) (Table 1).

Tension assessment, somatic concern, disturbance of volition assessment, unusual thought content assessment, and preoccupation were statistically insignificant between the two groups. Patients with comorbid OCD showed more anxiety, guilt feelings, depression, and better impulse control than those with schizophrenia only ( $P=0.00, 0.003, 0.004, \text{ and } 0.001$ , respectively). Patients with schizophrenia only showed more mannerisms and posturing, motor retardation, uncooperativeness, disorientation, poor attention, worse judgment and insight, active social avoidance, general psychopathology symptoms, and worse symptoms than those with comorbid OCD ( $P<0.05$ ) (Table 2).

Patients diagnosed with schizophrenia with comorbid OCD scored significantly higher in Mini-Mental State Assessment than cases with schizophrenia only ( $P=0.001$ ). Schizophrenic patients with comorbid OCD have better scanning, speed of processing, visual search speed, executive functioning, and mental flexibility compared with patients with

schizophrenia only ( $P=0.001$ ). The number of perseverative errors was more in schizophrenia only ( $P=0.019$ ), which was perceived as an inability to prevent a learned response despite error data and has been explained as the defining characteristic of frontal lobe dysfunction. Categories completed were more in schizophrenic patients with comorbid OCD ( $P=0.016$ ), which reflects overall success. Trials to complete first category were more in schizophrenia only ( $P=0.639$ ). Conceptual level responses were more in schizophrenia only ( $P=0.079$ ). Cases that had schizophrenia with comorbid OCD performed significantly better than patients diagnosed with schizophrenia only in general functioning ( $P=0.001$ ) (Table 3).

## Discussion

Obsessive-compulsive symptoms (OCS) have been described in psychotic disorders for at least 80 years, but their clinical significance in schizophrenia has not been systematically investigated. OCS was reported in cases with schizophrenia well before the publication of the DSM (Goldberg *et al.*, 1987; Frith and Done, 1988; Green and Harvey, 2014).

**Table 1 Age and sex distribution and psychometric data and Positive and Negative Syndrome Scale of participants**

	Group 1: schizophrenia with comorbid OCD (N=30)	Group 2: schizophrenia (N=30)	$\chi^2$	P value
Age	30.17±7.311	30.67±6.520	–	0.781
Sex				
Male	23 (77)	26 (87)	1.002	0.317
Female	7 (23)	4 (13)		
Psychometric data				
Yale-Brown OCD scale	16.27±5.699	0.00±0.00	–	0.001*
Hamilton depression rating scale	7.80±9.6	1.70±2.973	–	0.002*
PANSS				
SAPS				
Delusions	2.23±0.77	3.00±1.34	–	0.009*
Conceptual disorganization	1.73±0.64	2.70±0.92	–	0.001*
Hallucinatory behavior	1.17±0.53	3.33±1.29	–	0.001*
Excitement	1.27±0.58	2.00±0.70	–	0.001*
Grandiosity	1.00±0.00	1.13±0.43	–	0.103
Suspiciousness/persecution	2.07±0.64	3.13±1.20	–	0.001*
Hostility	1.17±0.40	1.87±0.82	–	0.001*
Total SAPS	10.63±1.54	17.17±5.18	–	0.001*
SANS				
Blunted affect	2.83±0.75	4.07±0.83	–	0.001*
Emotional withdrawal	2.83±0.87	3.70±0.88	–	0.001*
Poor rapport	1.80±0.71	3.20±0.66	–	0.001*
Passive/apathetic social withdrawal	2.47±1.01	3.33±0.80	–	0.001*
Difficulty in abstract thinking	1.63±0.96	3.47±1.41	–	0.001*
Lack of spontaneity and flow of conversation	2.20±0.89	3.73±0.56	–	0.001*
Stereotyped thinking	1.80±0.71	3.17±0.75	–	0.001*
Total SANS	15.57±3.25	24.30±4.04	–	0.001*

Data are represented as mean±SD. OCD, obsessive-compulsive disorder; PANSS, Positive and Negative Syndrome Scale; SANS, scale for assessment of negative symptoms; SAPS, scale for assessment of positive symptoms. \*Statistically significant.

**Table 2 General psychopathology scale**

	Group 1: schizophrenia with comorbid OCD (N=30)	Group 2: schizophrenia only (N=30)	P value
Somatic concern	1.50±0.86	1.33±0.48	0.359
Anxiety	2.80±1.10	1.47±0.68	0.001*
Guilt feelings	2.20±1.22	1.40±0.68	0.003*
Tension	1.83±1.02	1.83±0.79	1.000
Mannerisms and posturing	1.10±0.305	2.10±0.92	0.001*
Depression	2.13±1.17	1.37±0.72	0.004*
Motor retardation	1.53±0.73	2.40±0.62	0.001*
Uncooperativeness	1.50±0.68	2.43±0.68	0.001*
Unusual thought			
Content	1.67±0.55	1.67±0.76	1.000
Disorientation	1.00±0.00	1.87±0.94	0.001*
Poor attention	2.17±1.09	3.10±0.48	0.001*
Lack of judgment and insight	3.30±0.70	3.97±0.67	0.001*
Disturbance of volition	3.30±0.65	3.40±0.81	0.601
Poor impulse control	1.00±0.00	1.97±0.56	0.001*
Preoccupation	1.17±0.38	1.37±0.62	0.136
Active social avoidance	2.43±1.07	2.97±0.93	0.044*
General psychopathology			
Scale	30.63±4.33	34.63±4.56	0.001*
Total PANSS score	56.83±6.82	76.10±11.61	0.001*

Data are presented as mean±SD. OCD, obsessive-compulsive disorder; PANSS, Positive and Negative Syndrome Scale. \*Statistically significant.

**Table 3 Cognitive and functioning assessment**

	Group 1: schizophrenia with comorbid OCD (N=30)	Group 2: schizophrenia only (N=30)	P value
Mini-Mental State Examination	27.10±1.88	22.63±3.42	0.001*
Trail making test			
A	66.86±34.67	103.63±36.05	0.001*
B	165.83±78.86	270.50±53.19	0.001*
Wisconsin card sorting test			
Number of perseverative responses	40.03±40.03	49.50±49.50	0.093
Number of perseverative errors	18.17±18.17	28.13±28.13	0.019*
Number of nonperseverative errors	18.27±18.27	23.70±23.70	0.413
Trials to complete 1st category	23.73±23.73	27.80±27.80	0.639
Conceptual level responses	74.40±74.40	61.03±61.03	0.079
Categories completed	5.73±5.73	3.93±3.93	0.016*
General assessment of functioning			
Result of global assessment of functioning	71.43±13.06	49.37±8.85	0.001*

OCD, obsessive-compulsive disorder. \* Statistically significant.

From our study, we focused on cases with schizophrenia alone and those cases that had schizophrenia with comorbid OCD from 18 to 40 years of age. There was an insignificant correlation between OCD comorbidity and age or sex in the previous research.

According to some studies, schizophrenia cases with OCD had a higher level of education. In addition, Kokurcan and Nazlı (2020) reported that marital and socioeconomic status showed no significant differences among the groups. On the contrary, Owashi *et al.* (2010) discovered that the comorbidity rate of OCD

with schizophrenia was connected to a lower socioeconomic status. Therefore, there is no causal connection between OCD and the sociodemographic characteristics of the cases.

Contrary to sociodemographic factors, the majority of clinical characteristics demonstrated a significant difference between the OCD and control groups.

Initially, our research revealed that the schizo-obsessive group had significantly higher scores in the HDRS, that is, more severe depressive symptoms than cases with schizophrenia only.

The influence of OCS on depressive dimension among cases suffering from schizophrenia has been shown in several studies, and doctors should be alerted to the likelihood that these patients are at an increased risk for suicidal behavior.

We considered depression one of the most important clinical correlates to be included in the comparison between our two studied patient groups. The effect of OCS on depressive dimension among patients suffering from schizophrenia has been showed in several studies, and this should alert clinicians to the possibility of an increased risk of suicidal behavior in these patients.

According to de Haan *et al.* (2005) and Rajkumar *et al.* (2008), there is severe depressive symptoms in acute patients with recent-onset schizophrenia with comorbid OCD as measured by Montgomery-Asberg depression rating scale, and this is consistent with the results of our study.

However, de Haan *et al.* (2005) suggested that OCSs and depressive symptoms may be independent phenomena, as they found that OCS remained stable after 6 weeks of treatment, whereas the severity of depressive symptoms diminished during this period.

In a study of 65 patients with schizophrenia with comorbid OCSs, Szmulewicz *et al.* (2015) showed a positive correlation between suicidality and intensity of OCS evaluated with YBOCS and with both obsession and compulsion YBOCS subscales (Addington *et al.*, 1992).

Moreover, the total YBOCS was also significantly correlated with depressive symptoms and a YBOCS higher than 8 was a significant independent predictive factor of suicide attempt. The effect on suicidality has been confirmed in a study of 246 patients after a first episode of psychosis, where presence of OCD was associated with more depressive symptoms and suicidal behaviors, plans, and attempts in the month before hospitalization (Poyurovsky *et al.*, 2007).

Overall, OCS appeared reliably associated with depressive symptoms and suicidality among patients with schizophrenia. Of note, none of these studies (including ourselves) evaluated depressive symptoms with the Calgary Depression Scale for Schizophrenia, a reliable questionnaire designed to assess depressive symptoms and differentiate them from negative symptoms of schizophrenia (Fenton and

McGlashan, 1986). Therefore, further studies seem necessary to acknowledge the effect of OCS on depressive symptoms in schizophrenia.

Regarding psychiatric symptoms rating, we used PANSS, the most extensively used measure of schizophrenia symptom severity. It consists of three subscales that provide a way to quantify aspects of psychiatric symptoms. These include SAPS, SANS, and general psychopathology scale. The patients were graded on 30 distinct symptoms based on the interview and family member responses.

From the results of our study, the cases that had schizophrenia with OCD were significantly lesser than schizophrenic cases without OCD (i.e. showed less symptoms) on the subscales of the SAPS. However, the grandiosity subscale of SAPS was insignificantly different between both groups. The total score of SAPS was substantially different among both groups where cases with schizophrenia only show more positive symptoms than cases that had schizophrenia with OCD.

Regarding the SANS, schizo-obsessive patients scored significantly lower than patients with schizophrenia only, that is, showed fewer negative symptoms on all SANS subscale scores as well as total SANS score.

Regarding the scale for general psychopathology, schizo-obsessive patients showed a higher increase than cases with schizophrenia only, that is, had more symptoms, on depression, anxiety and guilt feelings. However, patients suffering from schizophrenia only scored significantly higher than cases had schizophrenia with OCD. There was insignificantly different between the two groups in the remaining general psychopathology subscale scores (somatic concern, tension, preoccupation, lack of volition, and unusual thought content). We concluded from the total general psychopathology score that there is considerable disparity between the two groups, where patients with comorbid OCD showed less symptoms than those with schizophrenia only.

Although disorientation is not a characteristic feature of schizophrenia, our study showed that 50% of cases with schizophrenia only in the study group had mild disorientation. This means that general orientation is sufficient but there was some trouble with specifics, for example, the case may know his position but not the street name or may know the month but complicates the day of the week or the date by more than 2 days.

This may be owing to lack of concentration, withdrawal, or cognitive impairment. Similarly, Manschreck *et al.* (2000) found that 30% of the patient in their study were age bewildered. The distribution of reported ages among the age disoriented did not support a relationship between age at beginning schizophrenia and reported age. Finally, age disorientation is correlated with lower educational achievement before first hospitalization.

The patient of whether OCD has a negative effect on the prognosis of schizophrenia has been raised frequently but never definitively responded. Owing to the cross-sectional nature of our research, we did not expressly address the problem of course; however, the DSM-IV-defined course was comparable between the two groups.

In terms of global functioning and illness severity, schizo-obsessive individuals exhibited a degree of disability that was comparable to that of patients with schizophrenia. Our findings are consistent with those of a small number of prior research, which indicates that OCD does not have a negative effect on schizophrenia (Poyurovsky *et al.*, 1999; Tibbo *et al.*, 2000; Craig *et al.*, 2002). Nonetheless, some research studies suggest that schizo-obsessive cases have a bad prognosis (Fenton and McGlashan, 1986; Berman *et al.*, 1995; Poyurovsky *et al.*, 2001).

Regarding cognitive assessment, our results showed that the schizo-obsessive group had improved functioning in all cognitive tests. The schizo-obsessive group showed considerably higher concentration and visuospatial functioning, as measured by a MMSE score. Moreover, schizo-obsessive patients needed significantly shorter time to complete trail making tasks in both tests (A&B), which means better scanning, speed of processing, mental flexibility, visual search speed, and executive functioning (Arnett and Labovitz, 1995).

Our findings regarding WCST showed that cases with schizophrenia only showed worse performance on two of the WCST factors compared with the schizo-obsessive group. A number of perseverative errors are understood as failing to stop a taught reaction despite receiving erroneous information; this has been defined as the defining characteristic of frontal lobe dysfunction. Some investigators regard the number of perseverative errors as the most useful measure derived from the WCST (Braff *et al.*, 1991).

Thus, our study showed that patient with schizophrenia only were more diminished in abstract thinking than schizo-obsessive cases, as revealed by the smaller number of types completed and greater number of perseverative errors in WCST.

In WCST, there is a correlation between the degree of initial conceptualization and the capacity for abstraction and the number of trials required to effectively finish the first category. These cognitive talents require the frontal lobe to operate properly (Stuss and Alexander, 2000). The CLR score is the total number of three or more consecutive right answers (Heaton, 1981).

In contrast to our study, a study by Sahoo *et al.* (2018) described that schizophrenic group with OCD had poorer selective attention and cognitive processing and moderately poor on executive functioning than the schizophrenic group.

A meta-analysis by Cunill *et al.* (2013) estimated the data of neurocognitive deficits in schizo-obsessive cases and suggested that they have more diminishing in executive functioning and abstract capacity than schizophrenic cases as revealed by the fewer number of classes completed in the WCST.

In studies including individuals with shorter disease durations, those with schizo-obsessive disorder performed better than those with schizophrenia on cognitive tests (Borkowska *et al.*, 2003; Lee *et al.*, 2009). In the investigation by Hwang *et al.* (2000), schizo-obsessive disorder cases were chronically ill and achieved poorly on neuropsychological tests. Therefore, it has been proposed that OCD may have an ameliorating effect in the early stages of schizophrenia but may contribute to the disease's progression when it becomes chronic. Therefore, it has been hypothesized that OCD may have a mitigating effect in the early stages of schizophrenia but may contribute to the disease's progression if it becomes chronic. Borkowska *et al.* (2003), Lee *et al.* (2009), Frías *et al.* (2014), and Kazhungil *et al.* (2017) suggested that there is no substantial difference in cognitive functions among the two groups.

However, Borkowska *et al.* (2003), Lee *et al.* (2009), and Kumbhani *et al.* (2010) have shown that schizophrenia cases with OCD might be better than those without OCD. Berman *et al.* (1998) and Hermesh *et al.* (2003) concluded that the schizo-obsessive group had no difficulties in set shifting on the WCST. Lee *et al.* (2009) showed in their study that

the schizo-obsessive group had better IQ measurements and levels of concentration and visuospatial functioning and scored higher on vocabulary area subsets.

Variations in the WCST's core components may account for different WCST results, even though the WCST is a standardized test.

A study by Keefe and Easley (2006) suggested that cognitive deficits in schizophrenic cases have shown clear correlation with social and occupational function and quality of life.

General assessment of functioning was significantly different among both groups, where patients diagnosed with schizophrenia with OCD were significantly better. This was in accordance with Rajkumar *et al.* (2008), who described that the schizo-obsessive cases were less disabled than the schizophrenic cases regarding overall global functioning. Moreover, Tibbo *et al.* (2000) studied cases with high GAF scores and a limited duration of illness in the schizo-obsessive group.

However, Kokurcan and Nazlı (2020) reported that schizophrenic cases with OCD indicated poorer functionality than cases without OCD.

Varied results could be attributed to differing sample characteristics and the deployment of a thorough cognitive battery that evaluates multiple neurocognitive domains.

### Limitations

We were unable to study the causal association between the existence of OCS and clinical factors owing to our cross-sectional design. All cases were on psychotropic medicines, which can lead to either amelioration of certain symptoms or exacerbation of others. As this research was conducted at a local outpatient facility, the results cannot be generalized.

### Conclusions

Schizo-obsessive patients have better performance in all cognitive tests showing higher levels of concentration and visuospatial functioning and better visual search speed, scanning, speed of processing, and abstract thinking. Moreover, they have higher levels of overall social and occupational functioning. Important clinical consequence of our work is that schizo-obsessive cases do not inevitably have a more severe disease with a potentially worse prognosis.

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Nil.

### Conflicts of interest

There are no conflicts of interest.

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