**e-ISSN: 0975-9506, p-ISSN: 2961-6093**

**Available online on www.ijpqa.com doi: 10.25258/ijpqa.16.6.20**

**International Journal of Pharmaceutical Quality Assurance 2025; 16(6); 106-110**

**Original Research Article**

# Executive Function in OCD: A Comparison of Patients with Good Vs Poor Insight and Healthy Controls

**Shagun Gupta[1], Alok Tyagi[2], Akanksha Sain[3], Gaurav Rajender[4], Kashish Thaper[5]**

**[1]Junior Resident, Department Of Psychiatry, S.M.S Medical College, Jaipur, Rajasthan, India**
**[2]Senior Professor, Unit Head and Head of Department, Department of Psychiatry, S.M.S Medical College, Jaipur, Rajasthan, India**
**[3]Junior Resident, Department Of Psychiatry, S.M.S Medical College, Jaipur, Rajasthan, India**
**[4]Professor, Department of Psychiatry, S.M.S Medical College, Jaipur, Rajasthan, India**
**[5]Assistant Professor, Department of Psychiatry, S.M.S Medical College, Jaipur, Rajasthan, India**

**Received: 25-03-2025 / Revised: 23-04-2025 / Accepted: 26-05-2025**
**Corresponding Author: Dr. Shagun Gupta**
**Conflict of interest: Nil**

**Abstract:**

Obsessive Compulsive Disorder (OCD) is a common condition that causes significant impairment worldwide. The aim of the present study is to compare and evaluate executive functioning between healthy controls and OCD patients with good and poor insight. A total of 120 individuals were divided into three groups: OCD with good insight, OCD with poor insight, and healthy control group (n = 40 individuals per group). Executive functions of the participants were evaluated using standard neuropsychological tests (Digit Span Test forward and backward, Stroop Color Test, and Trail Making Tests A and B). There were statistically significant differences in all test scores among the three groups, indicating substantial differences between poor insight OCD patients, good insight patients and healthy control in terms of executive performance. OCD patients with poor insight demonstrated deficiencies in working memory, cognitive flexibility, processing speed, and inhibitory control. These results demonstrate how insight level and cognitive performance are related in OCD, and suggest that patients with low insight may benefit from specialized treatments that address their cognitive deficiencies.

**Keywords:** Obsessive Compulsive Disorder, Trail Making Test, Digit Span Test, Stroop Color Test.



## Introduction

Obsessive Compulsive Disorder, also known as OCD, is a chronic and impairing neuropsychiatric disorder characterized by obsessions (distressing and recurring thoughts, images, or impulses that are viewed as intrusive and persist despite efforts to ignore, resist, or suppress them) and Compulsions (repetitive, ritualized behaviors or mental acts intended to counteract the anxiety caused by the obsessions) [1]. According to the World Health Organization, OCD is in the top 10 serious condition in terms of job loss and a reduced quality of life. Although OCD may impact people of any age, it often starts to appear in young individuals [2].

Despite the fact that OCD is a relatively common condition with similar symptom dimensions worldwide, every individual's symptoms, processing level, and degree of comorbidity must be assessed independently. Numerous established neurobiological pathways, including particular brain circuits, are responsible for OCD [3].

OCD patients are more likely to be diagnosed with alcohol and drug misuse, as well as other mental health conditions. Adverse childhood experiences are also linked to OCD diagnoses [4]. Accurate diagnosis and understanding of the nature of disease are crucial in the early stages of recovery. Primary care physicians need to be knowledgeable about various forms of OCD and capable of identifying symptoms that point to the presence of obsessions or compulsions [5].

Patients with severe, persistent, treatment-refractory OCD may benefit from deep brain stimulation (DBS). However, only a small number of studies document the safety characteristics of DBS for mental health conditions, despite the possibility of major side effects [1].

Most executive function tasks reveal impairments in individuals with OCD, indicating a broad deficit in executive functioning. These deficits cannot be attributed to general motor slowing or depressive symptoms [6]. The performance of OCD patients may have been impacted by the various test formats and methodologies, indicating that future studies should carefully select the test formats and testing techniques [7]. The goal of this study is to compare and evaluate executive functioning between healthy

controls and OCD patients with good and poor insight using the Trail Making Test, Digit Span Test, and Stroop Color Test.

## Materials and Methods

Present study was a cross-sectional, comparative, and observational study of OCD patients and controls (n=120), conducted at the Department of Psychiatry, SMS Medical College, Jaipur, after the acceptance from the research review board and ethical committee.

**Selection Criteria for Patients:**

**Inclusion Criteria:**

- Patients diagnosed with OCD as per DSM-V TR criteria.
- Patients who gave written informed consent for the study.
- Patients between the ages of 18 and 65.
- Both male and female patients.

**Exclusion Criteria:**

Patients with Comorbid psychiatric disorders such as Schizophrenia or other psychotic disorders, Bipolar disorders, Intellectual developmental/Neuro developmental disorders, Substance dependence except Nicotine Use Disorder and Degenerative conditions or epilepsy.

**Selection Criteria for Controls:**

- Individuals between the ages of 18 and 65.
- Both male and female individuals.
- Individuals who are interested in taking part in the study.

**Exclusion Criteria:**

- Individuals suffering from psychiatric disorders.
- Individuals suffering from significant medical illnesses.

Before taking part in the study, the subjects had provided written, informed consent. The DSM-V TR diagnostic criteria were used to make the diagnosis, which was verified by two separate interviewers. Following the application of the PSE Schedule, controls were chosen. To evaluate insight in the research population, the Y-BOCS was used and patients were divided into 3 groups (good, poor insight, and healthy) (8). Neuropsychological testing (Trail Making Test, Digit Span Test, and Stroop Color Test) was employed to evaluate the executive functioning in the research population.

**Statistical Analysis:** Data were entered and analyzed using a software program named SPSS. Mean ± standard deviation (SD) scores were calculated using all measures across the groups. One-way ANOVA was used to compare group means, and correlation analysis was performed to examine associations between variables. A p-value of less than 0.05 was considered statistically significant.

**Ethical Concerns:** Ethical approval was obtained from the Institutional Ethical Committee to carry out the study. Information of the participants was kept private and confidential. Without affecting their management procedure, subjects were free to leave the study at any moment.

## Results

The study was conducted on 120 individuals, divided into three groups, i.e., OCD with good insight, OCD with poor insight, and healthy individuals, with 40 individuals in each group. The age of participants ranged between 18-60 years (31.22 ± 9.12), with the majority of them belonging to the 18-29 age group (48%), and followed by 30-44 years (43.3%) and 45-60 (8.3%). Compared to women (33.3%), men (66.6%) in the study population have a higher prevalence of OCD. Of the participants, 47% were single, 63% were married, and 8.3% were separated or divorced. The majority of the sample had at least a graduate degree (35%), followed by upper secondary (30%), secondary (21.6%), middle class (9.16%), and primary education (4.16%). The bulk of the sample (83.3%) does not have co-morbid depression. The greater part of the group (51.6%) had never taken psychotropics, whereas around 48% had previously taken psychotropic drugs. Of the participants, the majority were outpatients (85.8%), with inpatients accounting for 14.1%. The mean duration of illness in the patients was 5.1 ± 6.13 yrs. While a greater number of patients with poor insight (32.5%) needed inpatient treatment, a significant percentage of patients with good insight (90%) were handled in the outpatient. Additionally, all healthy controls (100%) visited the outpatient (Table 1).

**Table 1: Outpatient/Inpatient wise distribution among groups**

| Outpatient/Inpatient | Group | | | Chi-Square/F-test | |
|---|---|---|---|---|---|
| | Good Insight n(%) | Poor Insight n (%) | Healthy controls | $\chi^2$ | p value |
| **Outpatient** | 36(90%) | 27(67.5%) | 40(100%) | 18.22 | **0.0001*** |
| **Inpatient** | 4(10%) | 13(32.5%) | 0(0%) | | |

***Significant p value (≤0.05)**

Table 2 representing Mean ± SD of different test scores between the three groups showing the statistically significant differences ($p<0.05$) for all the test scores in the patients with good insight and poor insight OCD and healthy control. The strong correlation ($p<0.05$) between Digit Span forward

and backward supports that these cognitive functions are closely related. A strong correlation ($p<0.05$) was also observed between Trail Making Test A and B, which suggests that both tests measure overlapping cognitive abilities, with B being more demanding.

**Table 2: Comparison of different tests scores among the groups**

| Group | Trail Making Test A (Mean±SD) | Trail Making Test B (Mean±SD) | Digit Span Test forward (Mean±SD) | Digit Span Test backward (Mean±SD) | Stroop Colour Test (Mean±SD) |
|---|---|---|---|---|---|
| OCD with good insight | 49.45±2.97 | 133.18±24.63 | 4.35±0.85 | 3.30±0.68 | 275.60±7.78 |
| OCD with Poor Insight | 60.28±3.93 | 150.80±10.03 | 4.03±0.80 | 2.60±0.63 | 317.13±11.62 |
| Healthy Controls | 38.20±5.91 | 89.03±7.61 | 5.65±0.79 | 4.63±0.70 | 258.63±4.39 |
| F-Statistic | 242.61 | 155.35 | 43.704 | 92.741 | 501.11 |
| p value | **0.000*** | **0.000*** | **0.000*** | **0.000*** | **0.000*** |

***Significant p value (≤0.05)**

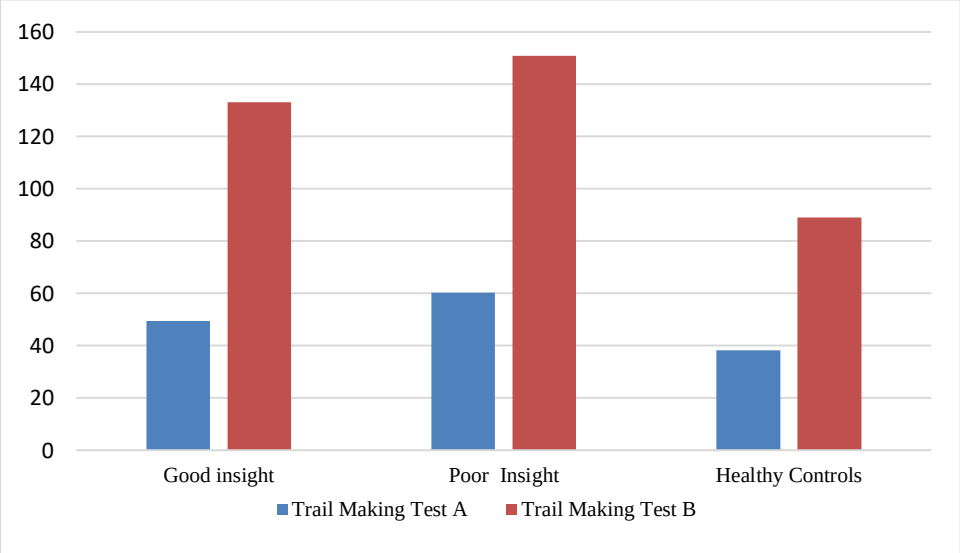


**Figure 1: Representation of Trail Making Test (A and B) scores among the groups**

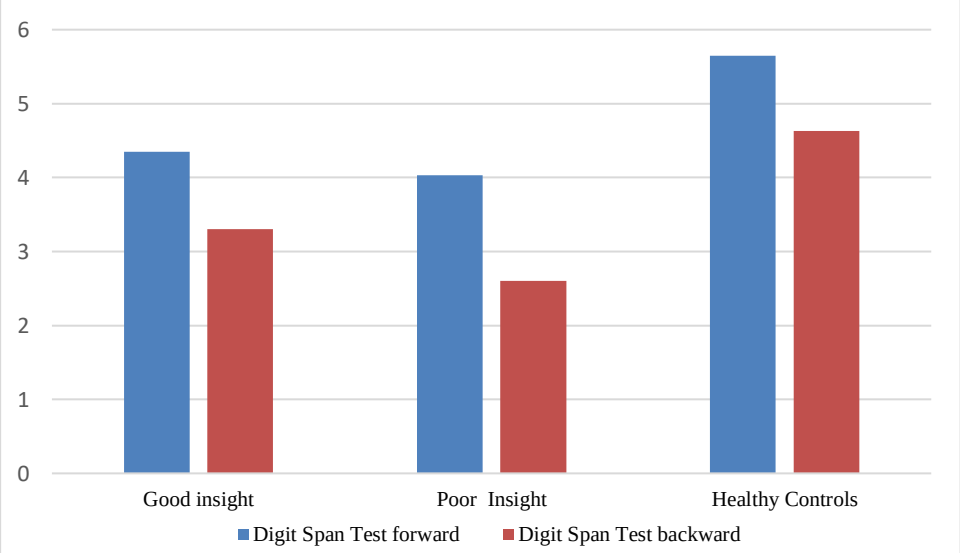


**Figure 2: Representation of Digit Span Test (forward and backward) scores among the groups**

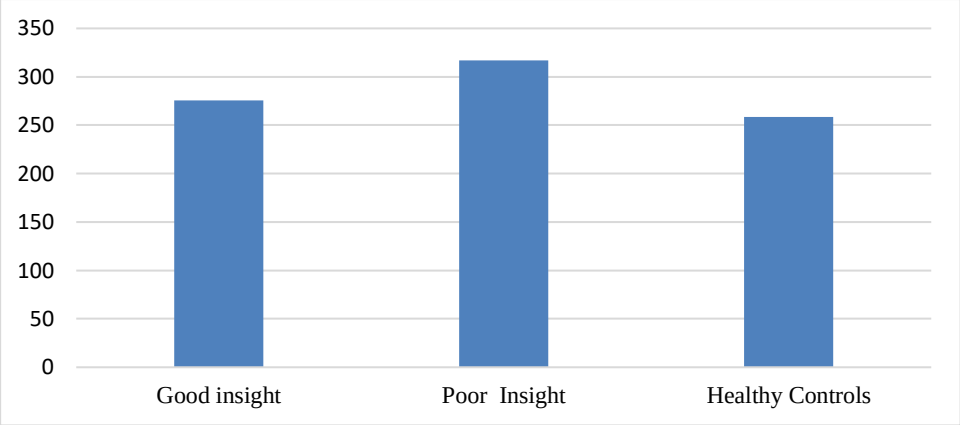


**Figure 3: Representation of Stroop Colour Test scores among the groups**

## Discussion

Numerous cognitive domains are impaired in obsessive-compulsive disorder (OCD), however. the results vary slightly across investigations. The findings showed that when compared to healthy control groups, OCD patients had deficiencies in nonverbal memory and executive functioning [9]. Poor insight is more detrimental to verbal memory, fluency, and conflict resolution/response inhibition. Poor insight patients can have a tougher time bringing separate facts together, updating their memory with new information, and then using this updated information to modify their prejudices [10].

All cognitive activities showed significant abnormalities in executive function, supporting the concept that poor insight in OCD is associated with compromised cognitive control systems. The poor insight group patients in the present study performed considerably inferior on the working memory assessment tests, Digit Span Forward and Backward ($p<0.05$). The findings of the Trail Making Test A and B showed that individuals with poor insight had significant ($p<0.05$) deficiencies in cognitive flexibility and processing speed. Additionally, the Stroop Color Test revealed substantial group differences ($p<0.05$), with the poor insight group exhibiting the longest reaction times. These results are consistent with previous studies which concluded that the neuropsychological performance of OCD patients with poor insight is noticeably lower than that of the control and good insight groups [8]. When autogenous and reactive obsession groups are compared, there is no statistically significant difference in the TMT or Stroop Test task performance. However, compared to the control group, both groups' performance was significantly poorer [11]. Individuals with OCD were shown to have abnormalities in their bilateral putamen, left pallidum, and right cranio-orbital foramen, which may be related to the pathophysiology and primary symptoms of this condition [12]. It is thought that dysfunctions in two inhibitory systems that are engaged in cognitive and behavioral processes are connected to the pathophysiology of OCD. These dysfunctions might affect not only cognitive and behavioral symptoms but also neuropsychological deficits related to this disorder, including attention, memory, planning, and decision-making [8]. Gurrieri et al. (2025) [13] supports a theory that, rather than objective memory impairment, compulsive behaviors are more often caused by executive dysfunctions and memory-related biases.

The information that is currently available on the association between various clinical features and poor insight in OCD patients is contradictory and inconclusive. Catapano et al. (2010) [14] report that the specifier "poor insight" helps identify a subset of people with OCD who are at the more severe end of the spectrum. These people are identified by their more complex clinical presentation, worse prognosis, and less reactivity to traditional pharmacological therapy. Manarte et al. (2021) [8] infer that individuals with poor insight have a distinct neuropsychological profile than those who have good insight, highlight the importance of executive processes in insight, and draw emphasis on the need for more precise neurocognitive research and care.

## Conclusion

The present study showed the significance of cognitive assessments and interventions that are based on insight status. The study concluded that there is a significant difference in the executive functioning of OCD patients with poor and good insight compared to healthy controls. From all the performed tests, it was observed that patients with poor insight performed the worst, showing noticeable deficits in working memory, cognitive flexibility, processing speed, and inhibitory control. The study highlights the need for further research on neurobiological associations, insight-based subtyping, and targeted cognitive therapies for executive dysfunction in OCD, especially in individuals with poor insight.

## References:

1 Menchón, J. M., Real, E., Alonso, P., Aparicio, M. A., Segalàs, C., Plans, G., & Gabriëls, L. A prospective international multi-center study on safety and efficacy of deep brain stimulation for resistant obsessive-compulsive disorder. Molecular Psychiatry, 2021;26, 1234-1247. https://doi.org/10.1038/s41380-019-0632-9

2 Veale, D., & Roberts, A. Obsessive-compulsive disorder. BMJ, 2014;348, g2183. https://doi.org/10.1136/bmj.g2183

3 Stein, D. J., Costa, D. L., Lochner, C., Miguel, E. C., Reddy, Y. J., Shavitt, R. G., ... & Simpson, H. B. Obsessive–compulsive disorder. Nature Reviews Disease Primers, 2019;5(1), 52. https://doi.org/10.1038/s41572-019-0102-3

4 Osland, S., Arnold, P. D., & Pringsheim, T. The prevalence of diagnosed obsessive compulsive disorder and associated comorbidities: A population-based Canadian study. Psychiatry Research, 2018;268, 137-142. https://doi.org/10.1016/j.psychres.2018.07.003

5 Fenske, J. N., & Schwenk, T. L. Obsessive-compulsive disorder: Diagnosis and management. American Family Physician, 2009;80(3), 239-245.

6 Snyder, H. R., Kaiser, R. H., Warren, S. L., & Heller, W. Obsessive-compulsive disorder is associated with broad impairments in executive function: A meta-analysis. Clinical Psychological Science, 2015;3(2), 301-330. https://doi.org/10.1177/2167702614562841

7 Shin, N. Y., Lee, T. Y., Kim, E., & Kwon, J. S. Cognitive functioning in obsessive-compulsive disorder: A meta-analysis. Psychological Medicine, 2014;44(6), 1121-1130. https://doi.org/10.1017/S0033291713001803

8 Manarte, L., Andrade, A. R., do Rosário, L., Sampaio, D., Figueira, M. L., Morgado, P., & Sahakian, B. J. Executive functions and insight in OCD: A comparative study. BMC Psychiatry, 2021;21, 216. https://doi.org/10.1186/s12888-021-03246-2

9 Abreu, D. D. F. de P., Almeida, N. L. de, & dos Santos, N. A. Executive functions' alterations in obsessive-compulsive disorder: A systematic literature review. Psicologia Argumento, 2024; 42(117). https://doi.org/10.5433/PA.V42I117.123456

10 Kashyap, H., Kumar, J. K., Kandavel, T., & Reddy, Y. J. Neuropsychological correlates of insight in obsessive–compulsive disorder. Acta Psychiatrica Scandinavica, 2012;126(2), 106–114. https://doi.org/10.1111/j.1600-0447.2012.01841.x

11 Uysal, E., Altun, I. K., & Karaguzel, E. O. The relationship between neurocognitive profile and metacognitions in obsessive-compulsive disorder patients with autogenous and reactive features. Dusunen Adam: The Journal of Psychiatry and Neurological Sciences, 2024;37(3), 140-154. https://doi.org/10.14744/DAJPNS.2024.00341

12 Bowen, Z., Changlian, T., Qian, L., Wanrong, P., Huihui, Y., Zhaoxia, L., & Mingtian, Z. Gray matter abnormalities of orbitofrontal cortex and striatum in drug-naive adult patients with obsessive-compulsive disorder. Frontiers in Psychiatry, 2021;12, 674568. https://doi.org/10.3389/fpsyt.2021.674568

13 Gurrieri, R., Gambini, M., Pescini, E., Mastrogiacomo, D., Russomanno, G., & Marazziti, D. Memory functions in obsessive–compulsive disorder. Brain Sciences, 202515(5), 492. https://doi.org/10.3390/brainsci150 50492

14 Catapano, F., Perris, F., Fabrazzo, M., Cioffi, V., Giacco, D., De Santis, V., & Maj, M. Obsessive-compulsive disorder with poor insight: A three-year prospective study. Progress in Neuro-Psychopharmacology and Biological Psychiatry, 2010;34(2), 323-330. https://doi.org/10.1016/j.pnpbp.2009.12.007