



Cognitive Deficits in Schizophrenia Patients and Their First-Degree Relatives: A Comparative Analysis

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Article Info: Received 19 November 2020; Accepted 29 December 2020

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ABSTRACT:

Background: Schizophrenia is associated with severe cognitive impairments, including deficits in memory, attention, and executive function. These cognitive deficits are also observed in first-degree relatives of individuals with schizophrenia, suggesting a potential genetic or familial predisposition. Understanding these cognitive impairments in both patients and their relatives can provide valuable insights into the hereditary aspects of the disorder and aid in early identification and intervention.

Aim: To compare neurocognitive deficits in patients with schizophrenia and their first-degree relatives, and to assess the potential hereditary patterns of these cognitive impairments.

Material and Methods: A total of 60 participants, including 30 patients with schizophrenia and 30 first-degree relatives, were assessed using standardized neuropsychological tests. Data on memory, attention, and executive function were collected and analyzed.

Results: Patients with schizophrenia exhibited more pronounced cognitive deficits compared to their relatives. Significant correlations were found between cognitive impairments and the risk of developing schizophrenia.

Conclusion: Schizophrenia patients show more severe cognitive deficits than their first-degree relatives, highlighting potential early markers for the disorder and the need for targeted interventions.

Keywords: Schizophrenia, neurocognitive deficits, first-degree relatives, cognitive impairments, memory, attention, executive function, genetic predisposition, psychiatric disorders and early intervention.

Introduction

Schizophrenia is a chronic and severe mental disorder characterized by a range of symptoms including delusions, hallucinations, disorganized thinking, and significant cognitive impairment. Cognitive deficits are a core feature of schizophrenia and can profoundly impact daily functioning and quality of life (1). These deficits often include impairments in executive functions, attention, memory, and processing speed (2). Interestingly, cognitive impairments are not limited to individuals with schizophrenia; they are also observed in their first-degree relatives, suggesting a potential genetic or familial predisposition to these cognitive deficits (3).

The presence of neurocognitive deficits in schizophrenia is well-documented, with research consistently showing that patients experience substantial challenges in cognitive domains crucial for everyday functioning. These cognitive impairments are thought to be related to structural and functional abnormalities in brain regions such as the prefrontal cortex and hippocampus, which are essential for cognitive processes (4). Studies have shown that patients with schizophrenia exhibit deficits in working memory, verbal memory, and executive functioning, which are critical for goal-directed behavior and problem-solving (5).

First-degree relatives of individuals with schizophrenia also exhibit neurocognitive deficits, although typically less severe than those seen in patients with the disorder. These deficits in relatives are thought to reflect a genetic vulnerability to schizophrenia. Research suggests that these cognitive impairments may be a part of the broader spectrum of risk factors that contribute to the development of schizophrenia (6). For instance, siblings of patients with schizophrenia often show subtle cognitive impairments that are not necessarily symptomatic but are indicative of an underlying susceptibility to the disorder (7).

Understanding the cognitive deficits present in both patients with schizophrenia and their first-degree relatives is crucial for several reasons. First, it helps to delineate the cognitive profile associated with schizophrenia and its hereditary aspects. This knowledge can contribute to the development of targeted interventions aimed at improving cognitive function in both patients and individuals at risk. Second, it highlights the potential for early identification and preventive strategies in individuals who may be at increased risk of developing schizophrenia. Identifying cognitive deficits in at-risk individuals could lead to earlier and more effective interventions that might delay or even prevent the onset of the disorder (8).

A number of studies have explored cognitive impairments in schizophrenia and its familial connections, but there is still a need for research that directly compares the cognitive profiles of schizophrenia patients with their first-degree relatives. Such studies can provide insights into the extent to which cognitive deficits are inherited and how they manifest in individuals who do not yet have the full clinical picture of schizophrenia (9). This research could be instrumental in understanding the neurobiological underpinnings of schizophrenia and its hereditary patterns, which in turn could improve diagnostic criteria and treatment approaches.

This study aims to investigate and compare neurocognitive deficits in patients with schizophrenia and their first-degree relatives. By

evaluating cognitive functions such as memory, attention, and executive function, this research seeks to better understand the similarities and differences in cognitive impairments between these two groups. Additionally, the study will explore whether the cognitive deficits observed in first-degree relatives are predictive of the development of schizophrenia and whether they differ significantly from those seen in individuals who have already been diagnosed with the disorder (10).

In summary, cognitive deficits are a central feature of schizophrenia and are also observed in first-degree relatives, reflecting a potential genetic or familial risk factor for the disorder. This study aims to elucidate these cognitive deficits further, offering insights into the genetic and neurobiological aspects of schizophrenia and improving our understanding of the disorder's familial transmission (11).

Aim and objectives:

Aim

To investigate and compare neurocognitive deficits in patients with schizophrenia and their first-degree relatives, and to assess the potential hereditary patterns of these cognitive impairments

Objectives

1. To Evaluate and compare the cognitive functions such as memory, attention, and executive function in patients with schizophrenia and their first-degree relatives.
2. To determine if there are significant differences in cognitive deficits between patients with schizophrenia and their first-degree relatives, and assess whether these deficits could indicate a genetic or familial predisposition to the disorder.

Material and methods:

This study was conducted in the Department of Psychiatry and included 60 participants: 30 patients diagnosed with schizophrenia and 30 first-degree relatives of these patients. Cognitive assessments were administered to evaluate

memory, attention, and executive function. Participants were assessed using standardized neuropsychological tests. Data were analyzed to compare cognitive performance between the two groups and to explore potential correlations

between cognitive deficits and the risk of developing schizophrenia.

Results:

Table 1: Cognitive Test Scores in Schizophrenia Patients vs. First-Degree Relatives

Cognitive Domain	Schizophrenia Patients (Mean ± SD)	First-Degree Relatives (Mean ± SD)
Memory	65 ± 8	72 ± 7
Attention	58 ± 9	66 ± 8
Executive Function	60 ± 10	68 ± 9

Table 1 shows that schizophrenia patients scored lower in all cognitive domains compared to their first-degree relatives, indicating more severe cognitive impairments in patients with the disorder.

Table 2: Correlation of Cognitive Deficits with Risk of Schizophrenia

Cognitive Deficit	Correlation Coefficient (r)	p-value
Memory	-0.45	<0.01
Attention	-0.38	0.03
Executive Function	-0.42	<0.05

Table 2 presents the correlations between cognitive deficits and the risk of developing schizophrenia, revealing significant negative correlations for memory, attention, and executive function, suggesting that greater cognitive deficits are associated with a higher risk of developing schizophrenia.

Discussion:

The study confirms that patients with schizophrenia exhibit more pronounced cognitive deficits compared to their first-degree relatives. This aligns with existing literature highlighting severe impairments in memory, attention, and executive function in schizophrenia patients (1). The less severe deficits observed in first-degree relatives could reflect a genetic predisposition to cognitive impairments without the full-blown symptoms of schizophrenia. The significant correlations found in the study suggest that these cognitive deficits might be indicative of a higher risk for developing schizophrenia, providing potential early markers for identifying individuals at risk (2).

The findings emphasize the importance of early cognitive assessments in individuals with a family history of schizophrenia. Identifying cognitive deficits in at-risk individuals could facilitate early intervention strategies aimed at preventing or delaying the onset of the disorder. Additionally, understanding the cognitive profiles of both patients and their relatives can aid in the development of more effective treatment and support strategies tailored to the specific needs of these populations (3).

Future research should focus on longitudinal studies to track cognitive changes over time in both patients and their relatives. Such studies could provide further insights into the progression of cognitive impairments and their relationship with the development of schizophrenia. Additionally, exploring the underlying neurobiological mechanisms contributing to these cognitive deficits could offer new targets for therapeutic interventions (4).

Conclusion:

This study highlights significant differences in cognitive deficits between patients with

schizophrenia and their first-degree relatives. Schizophrenia patients demonstrate more severe impairments in memory, attention, and executive function, while first-degree relatives show milder cognitive deficits. The observed correlations suggest that cognitive deficits could be a marker for increased risk of developing schizophrenia. These findings underscore the importance of early cognitive assessments and targeted interventions for individuals at risk, potentially improving outcomes and providing insights into the hereditary nature of schizophrenia.

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