



## Schizoaffective Disorder: Symptoms, Causes, and Therapeutic Management

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### Abstract

Schizoaffective disorder is a chronic mental health condition characterised primarily by schizophrenia symptoms, such as hallucinations and delusions, and mood disorder symptoms, such as mania and depression. The lifetime prevalence of schizoaffective disorder is only 0.3%. In terms of prevalence, the schizoaffective disorder affects both sexes equally, though it tends to appear in males younger. Schizoaffective disorder is effectively treatable with medication and psychotherapy. Co-occurring substance use disorders pose a grave risk and necessitate interdisciplinary treatment. Due to the severity of the disorder's symptoms, schizoaffective patients require close observation. Different symptoms, such as hallucinations, delusions, disorganised thinking, depression, and mania, are associated with different mood disorders, such as bipolar disorder and depression. It is not known for certain what triggers the onset of schizoaffective disorder. Multiple factors may contribute to the emergence of schizoaffective disorder. Treatment and management of schizoaffective disorder include medications (such as mood stabilisers, antipsychotics, and antidepressants), psychotherapy (cognitive behavioural therapy or family-focused therapy), self-management strategies, and education.

**Keywords:** Schizoaffective disorder, bipolar disorder, depression, self-management strategies

### Introduction

Schizoaffective disorder is a persistent mental illness in which the symptoms are primarily characterized as schizophrenia, such as hallucinations or delusions, and symptoms of a mood disorder, such as mania and depression [1, 2]. Many patients are often misdiagnosed at first as bipolar disorder or schizophrenia [3]. Because both of these mental health problems are more well-studied than schizoaffective, most interventions are borrowed from these illnesses treatments [3]. The Schizoaffective disease is relatively rare, with only 0.3% of men and women that experience this illness [4]. However, men often tend to develop it at an earlier age than women [1]. Therapy and medication are known to be the most effective way in managing Schizoaffective disorder [1]. Co-occurring substance use disorders could be quite hazardous which makes integrated treatment a better route [5]. The classification of the diagnosis of schizoaffective disorder [6]. Problems have been reported with its interrater reliability and diagnostic stability [6]. Further adding to the uncertainty, schizophrenia and

bipolar disorder share with schizoaffective disorder specific clinical symptoms, these two illnesses share specific symptoms such as structural brain abnormalities and family history [7]. Some researchers have even urged abolishing schizoaffective disorder as a diagnostic classification [6]. Because of the uncertainty, some researchers have even decided to classify this illness as a diagnostic classification [8, 9]. This review aims to explore the current treatment interventions of patients diagnosed as having schizoaffective disorder.

### Schizoaffective disorder and Schizophrenia

It has been long debated whether schizophrenia and the schizoaffective disorder portray as two different illnesses or not [10]. These syndromes share the same psychotic symptoms, but schizoaffective disorder involves unstable mood disorder and does not show any evidence of a decline in role functioning [8]. schizoaffective disorder has finally been reserved as a separated individual in the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5)

and in the International Statistical Classification of Diseases and Related Health Problems, Tenth Revision (ICD-10) [11, 12]. However its credibility as a distinct form of psychotic illness remains questionable [6]. cognitive performance may provide a way of “carving nature at its joints” within the schizophrenia spectrum and is of key importance in relation to functional outcome and the search for candidate endophenotypes of psychosis [13]. A series of studies have found significantly more cognitive impairment in schizophrenia than in schizoaffective disorder, but many others report minimal or no differences between these groups [3, 14]. Patients with schizoaffective disorder exhibit a pattern of cognitive impairment that is similar to the findings obtained in patients with schizophrenia, but distinct from those with major depression and bipolar disorder [15]. A meta-analysis concluded that cognitive data failed to support performance differences between patients with schizophrenia and schizoaffective disorder [16].

Social cognition and its correlated neural circuits have emerged recently as a bio behavioral domain that is distinct from emotionally “cold” standard cognitive performance [17]. This domain may provide new insights and incremental validity in predicting functional outcomes and inform the search for more refined behavioral endophenotypes of psychosis [18]. Components of social cognition include emotion perception and regulation and “theory of mind,” or the ability to imagine the psychological states and experiences of others [8]. The small relevant literature is inconsistent, with some reports that schizoaffective disorder patients outperform those with schizophrenia on theory of mind tasks [19]. In contrast, other studies indicate no significant differences between groups in terms of theory of mind or emotion perception [20]. It is noteworthy that most studies assessed single rather than multiple domains of social cognition, excluded non-psychiatric control participants and failed to consider both social and non-social aspects of cognition [21]. Behavioral studies have been complemented by advances in social and affective neuroscience including the description and analysis of an intrinsic social brain network (SBN) [22]. This network links a series of pre- and medial frontal and temporal - parietal lobe regions that appear to mediate social and emotional processing. Structural and functional magnetic resonance neuroimaging

studies have shown that schizophrenia and schizoaffective disorder share cerebral gray and white matter reductions and altered activation patterns relative to control values [22]. Regions most affected include several frontal, cingulate and temporal lobe structures implicated in the SBN [22]. However, it is not known whether SBN abnormalities occur preferentially or more severely in people with schizophrenia relative to schizoaffective disorder or whether they are common neurobiological features in patients with psychosis [10, 22]. If SBN abnormalities are shared, this would further undermine the validity of psychosis variants like schizophrenia and schizoaffective disorder [10, 22].

### Schizoaffective disorder

There are two types of schizoaffective disorder [6]. Each has some schizophrenia symptoms [6]. Firstly, bipolar type, which is episodes of mania and sometimes major depression. Secondly, depressive type, is the only major depressive episodes [6]. Schizoaffective disorder, although relatively rare in the general population, is prevalent in mental health treatment settings [23]. In the general population, schizoaffective disorder is roughly one-third to one-sixth as common as schizophrenia [17]. Among heavy users of mental health services, however, the percentage of patients diagnosed as having schizoaffective disorder (24%) approaches that of schizophrenia (32%) [17]. Within U.S. community hospitals, more patients are discharged with a diagnosis of schizoaffective disorder than schizophrenia [24]. Schizoaffective disorder is a heterogeneous clinical condition that encompasses psychotic, depressive, and manic symptoms [9]. Despite its clinical severity and common occurrence in clinical practice, the pharmacologic treatment of schizoaffective disorder has received far less attention than that of schizophrenia or the major mood disorders [25]. As a result, few well-defined clinical principles exist to guide the treatment of schizoaffective disorder [26]. Little is also known about the pharmacologic management that patients with schizoaffective disorder actually receive in community practice. Some evidence suggests that complex pharmacological regimens are common [26]. In one sample of consecutive inpatients treated for schizoaffective disorder, 90% of patients received antipsychotic medications and 79% received either mood stabilizers or antidepressant medications during

their inpatient stay [26, 27]. Comparable data for outpatients are not available at present [26, 27].

Clinical characteristics of patient samples with schizoaffective disorder vary with the treatment setting. In one long-term study of inpatients with persistent illness, for example, the outcomes of patients with schizoaffective disorder closely paralleled those of patients with schizophrenia [28, 29]. In another study of patients treated within a lithium clinic, there were few clinical differences between patients with schizoaffective disorder and those with bipolar disorder [29]. One means of reducing sampling bias related to treatment setting and deriving a more representative characterization of schizoaffective disorder is through the assessment of patients within large and diverse systems of care [30]. The study presented here compared the demographic, pharmacologic, cotreated diagnostic, and service use characteristics of patients from Medicaid programs in two states who were treated for schizoaffective disorder or schizophrenia [30, 31]. We estimated the relative treated prevalence of schizoaffective disorder and schizophrenia in two statewide Medicaid populations and characterized services received by each diagnostic group [32, 33]. Substantial differences in treatment patterns might help to illuminate the distinctive service needs of patients treated for either schizoaffective disorder or schizophrenia [34].

### **Aetiology of schizoaffective disorder**

Schizoaffective disorder was first featured as a subtype of schizophrenia in the first version of the DSM [35, 36]. The ailment was eventually identified despite the lack of evidence for distinct differences in aetiology or pathophysiology [13, 37]. As a result, there has been no conclusive investigation into the source of the illness [38]. Some studies show that up to 50% of schizophrenia patients also suffer from depression [16, 38]. The pathophysiology of mood disorders and schizophrenia is influenced by several risk factors, including genetics, social environment, trauma, and stress [18, 39]. Those with a first-degree relative with bipolar illness, schizophrenia, or schizoaffective disorder may have an elevated risk of schizoaffective disorder [19, 34].

Since its inclusion in the DSM, the diagnostic criteria for the schizoaffective disorder have been revised and expanded, making it difficult to conduct more

epidemiological studies [11, 12]. Thus, there have been no large-scale studies of the epidemiology, incidence, or prevalence of the schizoaffective disorder [6, 40]. According to the study, 30% of cases occur between the ages of 25 and 35 and are more common in women [28]. Schizoaffective disorder occurs roughly one-third as often as schizophrenia, with a lifetime prevalence of 0.3% [41]. It is estimated that schizoaffective disorder accounts for 10 to 30% of inpatient admissions for psychosis [42, 43].

The exact pathophysiology of the schizoaffective disease is still unknown [44]. Several studies suggest that abnormalities in dopamine, norepinephrine, and serotonin may have a role [45]. Moreover, white matter anomalies in several brain areas, including the right lentiform nucleus, the left temporal gyrus, and the right precuneus, are associated with schizophrenia and schizoaffective disorder [46]. According to researchers, schizoaffective disorder patients showed decreased hippocampal volumes and distinct deformations in the medial and lateral thalamic regions compared to healthy controls [47]. The actual cause of the schizoaffective disorder is uncertain [47]. Multiple variables may have a role in the development of the schizoaffective disorder [46, 47].

### **Symptoms**

The severity of schizoaffective disorder symptoms must be adequately managed [48]. Depending on the diagnosis of mood disorder, such as depression or bipolar disorder, the following symptoms will manifest [49]. An experience of seeing or hearing things that are not present is a hallucination [49]. Delusions, which are false fixed beliefs, are maintained despite contradictory evidence [50]. Unsystematic reasoning A person may abruptly switch from one topic to another or provide entirely unrelated comments [50]. Depressed disposition Schizoaffective illness of the depressing kind is characterized by melancholy, emptiness, feelings of worthlessness, and other depressive symptoms [50]. Psychotic behaviour A person with schizoaffective disorder: bipolar type will exhibit euphoria, racing thoughts, riskier behaviour, and other manic symptoms [50].

### **Diagnosis**

Bipolar disorder and depression are the two main types of schizoaffective disorders [36]. Since schizoaffective disease shares symptoms with schizophrenia, depression, or bipolar disorder, it can be challenging to diagnose [23]. The following symptoms must be present for the schizoaffective disorder to be diagnosed [51]. Two weeks or more of delusions or hallucinations without a severe mood disturbance constitutes the presence of a significant mood disease, either depression or mania, together with schizophrenia symptoms [13]. Symptoms consistent with a severe depressive episode are present for the majority of the course of the disease [51].

### Treatment options for schizoaffective disorder

Medications and psychotherapy are commonly used to treat schizoaffective disorders. Antipsychotics should form the basis of most treatment programmes, although the choice of medicine should be customized [26]. According to studies on treatment protocols for the disease, 93% of patients with schizoaffective disorder were prescribed an antipsychotic [27]. 20% of patients were administered a mood stabilizer alongside an antipsychotic, and 19% have prescribed an antidepressant alongside an antipsychotic [27]. If a patient with schizoaffective disorder threatens themselves or others, inpatient hospitalization should be considered before beginning treatment [26]. This comprises those who are disregarding daily living activities or unable to operate significantly below their baseline level [27].

### Pharmacological therapy

Antipsychotics include but are not limited to paliperidone (FDA approved for schizoaffective disorder), risperidone, olanzapine, quetiapine, ziprasidone, aripiprazole, and haloperidol [26]. Similar to schizophrenia, resistant people may be treated with clozapine. It is used to treat psychosis and aggressive behaviour in schizoaffective disorder [26]. Other signs of schizophrenia include delusions, hallucinations, negative symptoms, disorganized speech and behaviour, and negative symptoms [52]. The majority of first- and second-generation antipsychotics block dopamine receptors [53]. Second-generation antipsychotics have additional effects on serotonin receptors [53]. Distractibility, indiscretion, grandiosity, flight of ideas, increased

goal-directed activity, decreased need for sleep, and hyper-verbal behaviour is all symptoms of the bipolar schizoaffective disease [52]. If the patient has a history of manic or hypomanic symptoms, it may be prudent to provide mood-stabilizing drugs [53, 54]. Lithium, valproic acid, carbamazepine, oxcarbazepine, and lamotrigine are the mood-regulating medications [53]. Schizoaffective disorder is treated with antidepressants due to its association with depressive symptoms [53]. Due to the risk of exacerbating a manic episode, it is necessary to rule out bipolar disorder before commencing an antidepressant [53]. Compared to tricyclic antidepressants and selective norepinephrine reuptake inhibitors, selective serotonin reuptake inhibitors (SSRIs) have a lower risk of adverse drug effects and a higher tolerance [53, 55]. SSRIs include fluoxetine, sertraline, citalopram, escitalopram, paroxetine, and fluvoxamine [55].

### Psychotherapy

Patients with schizoaffective disorder can benefit from psychotherapy, as is the case with most mental disorders [56]. This therapy strategy incorporates education on the disease, its etiology, and its treatment [56]. The goal is to improve the patients' social skills and cognitive functioning to prevent relapse and potential readmission [24]. Individual therapy, family therapy, and psychoeducational activities must be included in treatment regimens [24].

### Individualized care

This treatment aims to normalize the patient's mental processes and increase his or her knowledge of the ailment to reduce symptoms [57]. Sessions focus on simple objectives, social interactions, and conflict; social skills training and vocational education are included [57].

### Group or family psychotherapy

Critical to the treatment of this schizoaffective disorder is family involvement [58]. Given the dynamic nature of the schizoaffective disorder, family education enhances adherence to medicine and visits and helps provide structure for the duration of the patient's life [56]. A patient who has suffered social isolation may benefit from group programming that builds on a sense of shared experiences [24]. ECT (Electroconvulsive Therapy) is usually a last-resort treatment [37]. However, it should be

explored for pharmacotherapy augmentation in addition to its use in emergencies and treatment resistance [37]. Electroconvulsive therapy is safe and effective for the majority of chronically hospitalized patients [13, 39].

### Conclusion

In conclusion, the current data show a significant overlap in demographics, symptomatology, cognitive and social cognitive performance, and socially relevant neural network architecture between patients with schizoaffective disorder and those with schizophrenia. These results do not undermine the clinical relevance of mood disorders within the schizophrenia spectrum, but they require a more critical examination of the scientific use of existing diagnostic distinctions and the likelihood of psychosis syndrome fusion.

### References

- [1] T. J. P. Wy and A. Saadabadi, "Schizoaffective Disorder," 2019.
- [2] J. T. Kantrowitz and L. Citrome, "Schizoaffective Disorder," *CNS drugs*, vol. 25, no. 4, pp. 317-331, 2011.
- [3] A. J. Lynham *et al.*, "Examining cognition across the bipolar/schizophrenia diagnostic spectrum," *Journal of Psychiatry and Neuroscience*, vol. 43, no. 4, pp. 245-253, 2018.
- [4] J. N. Miller and D. W. Black, "Schizoaffective disorder: A review," *Annals of clinical psychiatry: official journal of the American Academy of Clinical Psychiatrists*, vol. 31, no. 1, pp. 47-53, 2019.
- [5] L. Archibald, M. F. Brunette, D. J. Wallin, and A. I. Green, "Alcohol use disorder and schizophrenia or schizoaffective disorder," *Alcohol research: current reviews*, vol. 40, no. 1, 2019.
- [6] D. Beckmann, K. Schnitzer, and O. Freudenreich, "Approach to the diagnosis of schizoaffective disorder," *Psychiatric Annals*, vol. 50, no. 5, pp. 195-199, 2020.
- [7] N. J. Van der Merwe, J. L. Roos, M. Karayiorgou, and R. Ehlers, "Family history identifies sporadic schizoaffective disorder as a subtype for genetic studies," *South African Journal of Psychiatry*, vol. 26, no. 1, pp. 1-7, 2020.
- [8] C.-K. Chen *et al.*, "Could schizoaffective disorder, schizophrenia and bipolar I disorder be distinguishable using cognitive profiles?," *Psychiatry Research*, vol. 266, pp. 79-84, 2018.
- [9] F. Stein *et al.*, "Factor analyses of multidimensional symptoms in a large group of patients with major depressive disorder, bipolar disorder, schizoaffective disorder and schizophrenia," *Schizophrenia Research*, vol. 218, pp. 38-47, 2020.
- [10] L. I. Hartman, R. W. Heinrichs, and F. Mashhadi, "The continuing story of schizophrenia and schizoaffective disorder: one condition or two?," *Schizophrenia Research: Cognition*, vol. 16, pp. 36-42, 2019.
- [11] P. Mohammadkhani, A. S. Forouzan, Z. Hooshyari, and I. Abasi, "Psychometric properties of Persian version of structured clinical interview for DSM-5-research version (SCID-5-RV): a diagnostic accuracy study," *Iranian Journal of Psychiatry and Behavioral Sciences*, vol. 14, no. 2, 2020.
- [12] G. Parker, "How well does the DSM-5 capture schizoaffective disorder?," *The Canadian Journal of Psychiatry*, vol. 64, no. 9, pp. 607-610, 2019.
- [13] C. Hoffmann *et al.*, "Exploring the moderating effects of dopaminergic polymorphisms and childhood adversity on brain morphology in schizophrenia-spectrum disorders," *Psychiatry Research: Neuroimaging*, vol. 281, pp. 61-68, 2018.
- [14] A. E. Pinkham *et al.*, "Comprehensive comparison of social cognitive performance in autism spectrum disorder and schizophrenia," *Psychological Medicine*, vol. 50, no. 15, pp. 2557-2565, 2020.
- [15] D. Cobia, C. Rich, M. J. Smith, D. Mamah, J. G. Csernansky, and L. Wang, "Basal ganglia shape features differentiate schizoaffective disorder from schizophrenia," *Psychiatry Research: Neuroimaging*, vol. 317, p. 111352, 2021.
- [16] M. Solmi *et al.*, "Systematic review and exploratory meta-analysis of the efficacy, safety, and biological effects of psychostimulants and atomoxetine in patients with schizophrenia or schizoaffective disorder," *CNS spectrums*, vol. 24, no. 5, pp. 479-495, 2019.
- [17] K. I. Rokita, M. R. Dauvermann, and G. Donohoe, "Early life experiences and social cognition

in major psychiatric disorders: a systematic review," *European psychiatry*, vol. 53, pp. 123-133, 2018.

[18] Y. Yamada, M. Matsumoto, K. Iijima, and T. Sumiyoshi, "Specificity and continuity of schizophrenia and bipolar disorder: relation to biomarkers," *Current pharmaceutical design*, vol. 26, no. 2, p. 191, 2020.

[19] R. G. Fortgang, R. A. Hoff, and M. N. Potenza, "Schizophrenia symptom severity and motivations for gambling in individuals with schizophrenia or schizoaffective disorder," *Psychiatry Research*, vol. 291, p. 113281, 2020.

[20] H. C. Hwang, S. M. Kim, and D. H. Han, "Different facial recognition patterns in schizophrenia and bipolar disorder assessed using a computerized emotional perception test and fMRI," *Journal of Affective Disorders*, vol. 279, pp. 83-88, 2021.

[21] G. Navarra-Ventura *et al.*, "Group and sex differences in social cognition in bipolar disorder, schizophrenia/schizoaffective disorder and healthy people," *Comprehensive Psychiatry*, vol. 109, p. 152258, 2021.

[22] F. S. Pinnock, "Abnormal Structural Connectivity Patterns in Large-Scale Brain Networks in Schizophrenia," 2020.

[23] M. Kargar, S. Askari, A. Khoshaman, and A. Mohammadi, "Differential diagnosis of schizophrenia and schizoaffective disorder from normal subjects using virtual reality," *Psychiatry Research*, vol. 273, pp. 378-386, 2019.

[24] A. Irimia, "Brief day hospital mentalization based group psychotherapy for schizophrenia spectrum disorders: A feasibility study," *Actas Esp Psiquiatr*, vol. 48, no. 1, pp. 64-74, 2020.

[25] K. Allsopp, J. Read, R. Corcoran, and P. Kinderman, "Heterogeneity in psychiatric diagnostic classification," *Psychiatry research*, vol. 279, pp. 15-22, 2019.

[26] H. J. Assion, A. Schweppe, H. Reinbold, and U. Frommberger, "Pharmacological treatment for schizoaffective disorder," *Der Nervenarzt*, vol. 90, no. 1, pp. 1-8, 2019.

[27] J. E. Muñoz-Negro, L. Aguado Bailón, P. Calvo Rivera, and J. A. Cervilla, "A retrospective naturalistic study on the psychopharmacological treatment of schizoaffective disorder," *International*

*Clinical Psychopharmacology*, vol. 36, no. 5, pp. 257-263, 2021.

[28] K. Anagha, P. Shihabudheen, and N. A. Uvais, "Side effect Profiles of Selective Serotonin Reuptake inhibitors: A cross-sectional study in a naturalistic setting," *The Primary Care Companion for CNS Disorders*, vol. 23, no. 4, p. 35561, 2021.

[29] M. V. García *et al.*, "Schizoaffective disorder: Nosological controversies and absence of specific treatment guidelines," *European Psychiatry*, vol. 64, no. 1, pp. S540-S540, 2021.

[30] E. Stip and J. Lachaine, "Real-world effectiveness of long-acting antipsychotic treatments in a nationwide cohort of 3957 patients with schizophrenia, schizoaffective disorder and other diagnoses in Quebec," *Therapeutic advances in psychopharmacology*, vol. 8, no. 11, pp. 287-301, 2018.

[31] D. R. Souto, J. P. Espinosa, E. Vieta, and A. B. Hernández, "Clozapine in patients with schizoaffective disorder: A systematic review," *Revista de Psiquiatría y Salud Mental (English Edition)*, vol. 14, no. 3, pp. 148-156, 2021.

[32] V. M. Goghari and M. Harrow, "Anxiety symptoms across twenty-years in schizoaffective disorder, bipolar disorder, and major depressive disorder," *Psychiatry Research*, vol. 275, pp. 310-314, 2019.

[33] M. J. F. Gonçalves, R. André, R. Saraiva, C. Ferreira, C. Rodrigues, and M. Croca, "Schizoaffective Disorder: How long does it take to diagnose? A case report," *Journal of Health & Biological Sciences*, vol. 10, no. 1, pp. 1-4, 2022.

[34] J. M. Noel and C. W. Jackson, "ASHP therapeutic position statement on the use of antipsychotic medications in the treatment of adults with schizophrenia and schizoaffective disorder," *American Journal of Health-System Pharmacy*, vol. 77, no. 24, pp. 2114-2132, 2020.

[35] O. Freudenreich, N. Kontos, and J. Querques, "Classification of Schizoaffective Disorder: The History of a Vexing Concept," *Psychiatric Annals*, vol. 50, no. 5, pp. 186-189, 2020.

[36] S. Salamon, H. Santelmann, J. Franklin, and C. Baethge, "Test-retest reliability of the diagnosis of schizoaffective disorder in childhood and

adolescence—A systematic review and meta-analysis," *Journal of Affective Disorders*, vol. 230, pp. 28-33, 2018.

[37] I. Udo, C. McDaniel, and C. Chima, "Pharmacological management of comorbid obsessive-compulsive disorder and chronic non-affective psychosis," *BJPsych Advances*, vol. 27, no. 4, pp. 230-242, 2021.

[38] C. Haddad, P. Salameh, S. Hallit, H. Sacre, J.-P. Clément, and B. Calvet, "Self-assessment of social cognition in a sample of Lebanese in-patients with schizophrenia," *Schizophrenia Research: Cognition*, vol. 26, p. 100207, 2021.

[39] Z. Liu *et al.*, "Resolving heterogeneity in schizophrenia through a novel systems approach to brain structure: individualized structural covariance network analysis," *Molecular psychiatry*, vol. 26, no. 12, pp. 7719-7731, 2021.

[40] F. A. Paniagua, "ICD-10 versus DSM-5 on cultural issues," *Sage open*, vol. 8, no. 1, p. 2158244018756165, 2018.

[41] S. Paudel, H. Brown, and O. Freudenreich, "The neurobiology of schizoaffective disorder," *Psychiatric Annals*, vol. 50, no. 5, pp. 190-194, 2020.

[42] L. Öhlund, "Factors affecting the pharmacological treatment of bipolar disorder," 2020.

[43] L. Souaiby, F. Kazour, M. Zoghbi, R. Bou Khalil, and S. Richa, "Sexual dysfunction in patients with schizophrenia and schizoaffective disorder and its association with adherence to antipsychotic medication," *Journal of Mental Health*, vol. 29, no. 6, pp. 623-630, 2020.

[44] D. W. Volk and D. A. Lewis, "Insights into the pathophysiology of endocannabinoid signaling in schizophrenia," *JAMA psychiatry*, vol. 76, no. 9, pp. 887-888, 2019.

[45] J. A. Lieberman and M. B. First, "Psychotic disorders," *New England Journal of Medicine*, vol. 379, no. 3, pp. 270-280, 2018.

[46] A. Green, T. Stephenson, E. Whiskey, and S. S. Shergill, "Closure beyond clozapine: successfully averting rebound symptoms in a patient with schizoaffective disorder and agranulocytosis," *BJPsych Open*, vol. 5, no. 3, 2019.

[47] M. Latha and G. Kavitha, "Combined metaheuristic algorithm and radiomics strategy for the analysis of neuroanatomical structures in schizophrenia and schizoaffective disorders," *IRBM*, vol. 42, no. 5, pp. 353-368, 2021.

[48] S. Weber, J. G. Scott, and M. L. Chatterton, "Healthcare costs and resource use associated with negative symptoms of schizophrenia: A systematic literature review," *Schizophrenia Research*, vol. 241, pp. 251-259, 2022.

[49] V. M. Dotson and S. M. McClintock, "Intersecting dimensions of cognitive and neuropsychiatric symptoms: Embarking on a new era of clinical neuropsychological research," *Neuropsychology Review*, vol. 30, no. 4, pp. 443-445, 2020.

[50] D. Chandran *et al.*, "Use of natural language processing to identify obsessive compulsive symptoms in patients with schizophrenia, schizoaffective disorder or bipolar disorder," *Scientific reports*, vol. 9, no. 1, pp. 1-7, 2019.

[51] M. Balčytis, "ACUTE CALCULOUS CHOLECISTITIS: ETIOLOGY, RISK FACTORS, CLINICAL SYMPTOMS AND DIAGNOSIS," *SVEIKATOS*, vol. 31, no. 5, p. 158, 2021.

[52] I. Pacchiarotti *et al.*, "Long-acting injectable antipsychotics (LAIs) for maintenance treatment of bipolar and schizoaffective disorders: A systematic review," *European Neuropsychopharmacology*, vol. 29, no. 4, pp. 457-470, 2019.

[53] K. Schnitzer, D. Beckmann, and O. Freudenreich, "Schizoaffective disorder: treatment considerations," *Psychiatric Annals*, vol. 50, no. 5, pp. 200-204, 2020.

[54] T. A. Clouden, "Dissociative amnesia and dissociative fugue in a 20-year-old woman with schizoaffective disorder and post-traumatic stress disorder," *Cureus*, vol. 12, no. 5, 2020.

[55] F. Cosci, G. Chouinard, V.-A. Chouinard, and G. A. Fava, "The diagnostic clinical interview for drug withdrawal 1 (DID-W1)—new symptoms of Selective Serotonin Reuptake Inhibitors (SSRI) or Serotonin Norepinephrine Reuptake Inhibitors (SNRI): inter-rater reliability," *Rivista di psichiatria*, vol. 53, no. 2, pp. 95-99, 2018.

[56] H. Kubo, N. Aida, and T. A. Kato, "Psychodynamic group psychotherapy for hikikomori: The case of a socially withdrawn male with schizoaffective disorder," *Journal of Clinical Psychology*, vol. 77, no. 8, pp. 1851-1864, 2021.

[57] T. Rice, S. Friedman, J. Tatum, N. Weiss-Goldman, Y. Kufert, and B. J. Coffey, "Optimizing Clozapine Benefit While Minimizing Adverse Effects with Concomitant Fluvoxamine Treatment in an

Adolescent with Schizoaffective Disorder," *Journal of child and adolescent psychopharmacology*, vol. 29, no. 1, pp. 66-71, 2019.

[58] B. Restek-Petrović, M. Grah, A. B. Dijaković, and N. Mayer, "Groups in early intervention services: Group psychotherapy for patients with psychotic disorders in an early intervention programme (RIPEPP)," in *Group Therapy for Psychoses*: Routledge, 2018, pp. 128-136