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Review Article

Assessing Clinical Symptoms and Their Subtypes in The Management of Schizophrenia Spectrum Disorder

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ABSTRACT

Schizophrenia is a mental disorder characterized by disruption in thought process, perception, emotional responsiveness and social interaction. It is a common illness, with a lifetime prevalence near 1% (2020) approximately 24 million individuals world wide suffer from schizophrenia on the basis of the latest reviews paranoid schizophrenia is the most common type characterized by hallucinations, delusions and irregular thinking of behaviour. The suicidality will increase in this type of schizophrenia. The implications of these findings for developing precision medicine for psychotic symptoms as well as negative and cognitive symptoms used for conventional and atypical antipsychotics. By all the researchers done it will be helpful for the in-depth study and diagnosis of the disease.

INTRODUCTION

Schizophrenia is a persistent and severe mental condition that affects a person's thoughts, feelings, and behaviour. It is a complicated and diverse disorder that can have an impact on many parts of a person's life, including relationships, work or academic performance, and overall wellbeing. Disability is frequently caused by a combination of negative symptoms (loss or deficiencies) and cognitive symptoms, such as difficulties with attention, working memory, or executive function.

Relapse can also arise as a result of positive symptoms such as suspicion, delusions, and hallucinations. Theories on the pathogenesis of schizophrenia have been based on abnormalities in neurotransmission. Most of these hypotheses are based on an excess or lack of neurotransmitters such as dopamine, serotonin, and glutamate. Other ideas suggest that aspartate, glycine, and gamma-aminobutyric acid (GABA) contribute to schizophrenia's neurochemical imbalance. (1)

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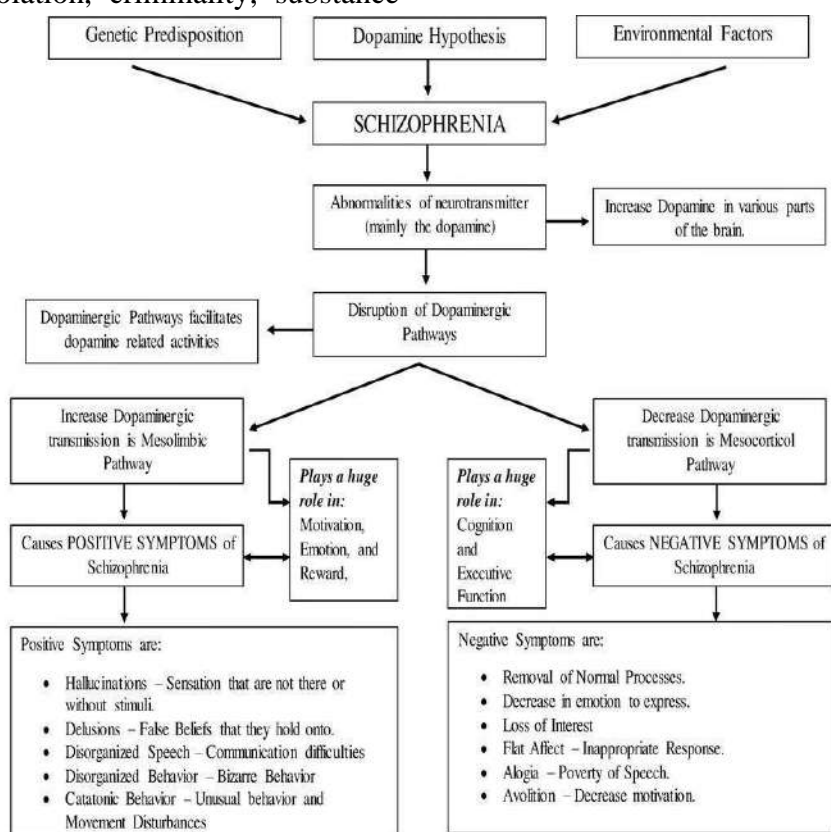
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Suicide is the leading cause of unnatural death for those diagnosed with schizophrenia. Suicide rates in this group are over ten times greater than in the general population. Suicidal thoughts are frequent, with around 50% of people attempting suicide at some point in their lives. As a result, reducing suicide-related outcomes in schizophrenia remains a top international public health priority .(Ref 2) A variety of demographic, clinical, and behavioural characteristics have been linked to suicide in patients with schizophrenia. while certain risk factors are essentially similar to those found in the general population, such as male gender, age, unemployment, isolation, criminality, substance

abuse, trauma, and access to fatal methods, others are schizophrenia-specific and relate to illness progression, symptoms, and medication. (3)Environmental and societal variables may also influence the development of schizophrenia, particularly in those who are predisposed to the condition. Paranoid schizophrenia is the most severe type of schizophrenia, in which individuals are unable to regulate or recognize what reality is and what are hallucinations or delusions. Schizophrenia most commonly affects those between 16 to 30.(4)

Pathophysiology of schizophrenia:



Figures 1: Pathophysiology of Schizophrenia

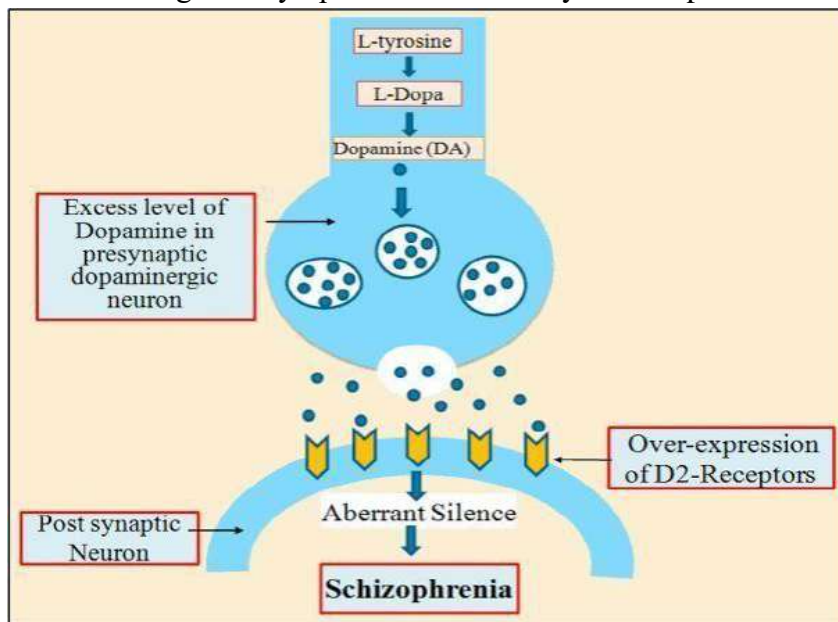
Neurotransmitter abnormalities are fundamental to schizophrenia pathophysiology, with dopamine, serotonin, glutamate, and gamma amino butyric acid (GABA) all involved.(5) The association between dopamine and schizophrenia originated from the accidental discovery of dopamine. Four major dopamine routes in the brain have been :

mesolimbic, mesocortical, tuberoinfundibular, and nigrostriatal. (6) Excessive dopamine activity in the mesolimbic pathway, which connects the ventral tegmental area and the limbic regions, is hypothesized to contribute to the positive symptoms of schizophrenia. Reduced dopamine levels in the mesocortical pathway, which



connects the ventral tegmental area in the cortex, could explain unpleasant symptoms and cognitive difficulties.(7) These findings point to separate pathophysiological mechanisms behind a schizophrenia's positive and negative symptoms.

Furthermore, the nigrostriatal pathway is linked to extrapyramidal motor adverse effects caused by D2 receptor blockers, and the tuberoinfundibular pathway is associated with hyperprolactinemia caused by D2 receptor blocker use.(7)



• **Figures 2: Pathophysiology of Schizophrenia dopamine pathway PHASES:**

PRODROMAL PHASE	ACTIVE PHASE	RESIDUAL PHASE
<p>This phase marks the onset of deterioration and usually appears during the late teens and mid 20s. As the individual is still quite young, parents tend to notice that something is not quite right. Symptoms are predominantly negative and milder. They include:</p> <ul style="list-style-type: none"> • Withdrawn & uninterested in others • Express beliefs that are unusual, but not delusional • Strong perceptual experience, w/o full blown hallucinations • Speak in a somewhat disorganized way but still coherent 	<p>This is when symptoms - either gradually or suddenly - become apparent. Depending on the individual and treatment, the amount of time the active phase lasts varies greatly.</p>	<p>This phase is characterized by the return to the prodromal phase. Approximately 25% of persons with schizophrenia fully recover, meaning that symptoms can no longer be detected by other people. The remaining 75% continue to experience residual problems.</p>

Figures 3: phases of Schizophrenia

Symptoms of schizophrenia:

Symptoms of schizophrenia are divided into three categories:

- ◆ positive symptoms

- ◆ negative symptoms
- ◆ cognitive symptoms

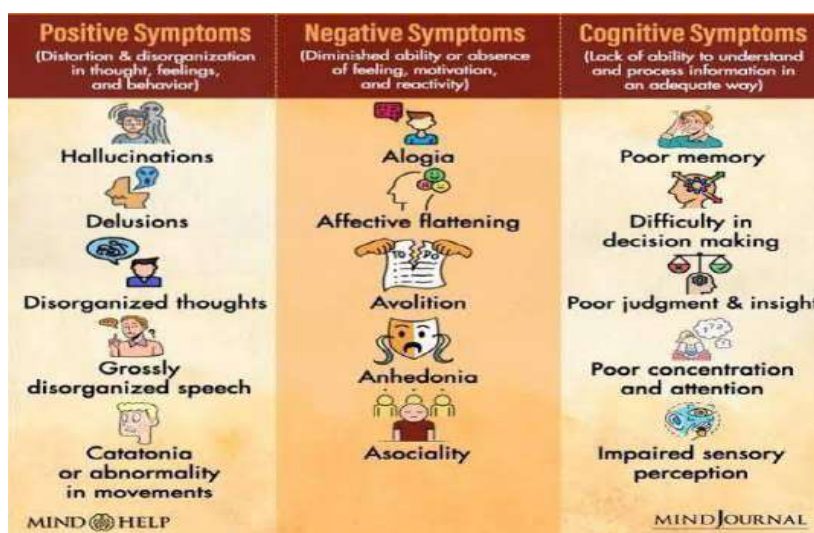


Figure 4: symptoms of Schizophrenia

1. Positive symptoms:

Positive symptoms of schizophrenia describe actions that are not commonly observed in people who do not have the disorder. Symptoms include:

- delusions
- hallucinations
- disorganised thinking
- abnormal body movements
- agitation.

>Delusions

A delusion is something a person believes to be true despite evidence to the contrary. These illusions, which are usually based on something incorrect or unrealistic, frequently drive the person to behave differently than usual. They may even attempt to utilize a deluded belief to justify or explain their conduct. A person with schizophrenia may also believe that someone is observing, following, or talking about them behind their back. As a result, people may develop suspicions of intimate friends and family members. (10) This is commonly referred to as “paranoid schizophrenia,” and it affects about half of those who have the disorder. Various environmental and genetic variables can cause paranoid schizophrenia. Delusions may last for weeks or even months. A slightly older 20-year study Trusted Source that tracked 200 adults with

schizophrenia found that 57% of them had recurring delusions. (11)

>Hallucinations

A hallucination is something that does not exist but which the person believes they can touch, see, hear, smell, or taste. One of the most common types of hallucinations in people with schizophrenia is auditory hallucination, which refers to sounds that a person hears in their head. Regardless, most people who hear voices believe they are as real as if someone nearby was speaking. In reality, investigations employing neuroimaging technology reveal significant abnormalities in the speech area of the brain in persons with schizophrenia. This is a strong indication that the brain confuses imaginary voices for real ones. Around 70% of persons with schizophrenia report hearing voices. (12)

>Disorganized thinking

If you have schizophrenia, you may struggle to order your ideas, stop talking in the middle of a thought, or make up terms that no one else understands. Your method of thinking may appear illogical to others. (12)

>Abnormal bodily movements

If you have schizophrenia, you may have abnormal body movements, such as: Stereotyped movements: Repetitive motions. Catatonia is

defined as the inability to respond to one's surroundings. It can range from being fully "frozen" and not moving or talking to participating in excessive activity without any apparent cause(12)

>**Agitation:** Excessive verbal or motor activity, irritability, uncooperative behaviour, yelling, and threatening others. (12)

2. Negative symptoms

Negative symptoms of schizophrenia are characterized by the absence of normal actions, emotions, or thoughts. These symptoms can be just as debilitating as positive symptoms (such as hallucinations or delusions), affecting a person's quality of life significantly. Negative symptoms are classified into two subcategories:

1.Primary negative symptoms: These are symptoms that are unique to the illness and are not caused by other variables such as pharmaceutical side effects or depression.

2.Secondary negative symptoms: These are symptoms caused by other reasons, such as drug side effects, depression, or environmental exposure.

Some common unfavourable symptoms of schizophrenia are:

- 1. Apathy:** refers to a lack of desire, interest, or enthusiasm.
- 2. Alogia:** is a lack of speaking or conversation skills.
- 3. Anhedonia:** The inability to feel pleasure or enjoyment
- 4. Asociality:** Social retreat or disinterest in social relations.
- 5. Avolition:** The absence of initiative or goal-directed action.
- 6. Blunted affect:** less emotional expression or response. (13)

3. Cognitive symptoms

Doctors identify cognitive symptoms of schizophrenia using neurocognitive tests, which

are tests to identify your capabilities across different areas of mental functioning.

Examples of cognitive symptoms of schizophrenia include:

- ◆ processing speed
- ◆ working memory
- ◆ attention and vigilance
- ◆ verbal learning
- ◆ reasoning and problem solving
- ◆ social cognition

>Processing Speed

Processing speed refers to how quickly you absorb, assess, and respond to new information. This cognitive trait influences how rapidly you think, learn, and react to your surroundings. The amount of white matter in the brain influences processing speed. White matter comprises nerve cell axons, which carry signals between brain cells. Myelin is a material that covers axons and helps to speed up signal transmission. Schizophrenia is connected with myelin disturbances, which result in less white matter and slower processing speeds. If you have a slow processing speed, you may require additional time to respond to questions. You may become overwhelmed by too much information at once, and you may require instructions or information repeated.(14)

>Working Memory

Working memory is the information you remember in order to execute an immediate task.

Examples of working memory include

- multistep instructions,
- short shopping lists,
- mental math

Impaired working memory is a typical feature of schizophrenia. It is associated with decreased activity in the prefrontal cortex, a region of the brain. If you have trouble repeating what you just heard or recalling directions, this could suggest a problem with your working memory.(14)



>Attention and vigilance

Both the terms “trusted source” and “focus” refer to something specific. Attention focuses on a task or something that is currently happening, but vigilance focuses on looking for something that may occur. Whether or not you are experiencing psychosis, if you have schizophrenia, you may have decreased attention and vigilance.(14)

>Verbal Learning

Verbal learning focuses on aspects such as:

- words
- syllables
- Letters
- numbers

A verbal learner is someone who recalls what they’ve heard and read and can express themselves effectively using language. A 2018 review. Trusted The source of 17 studies connected immediate and delayed verbal learning to reductions in the volume of the hippocampus, a critical location for memory. One of the cognitive signs of schizophrenia is dysfunction in this area, which leads to impaired language learning.

In addition, a 2000 study found that declines in brain activity, notably in the prefrontal cortex, are linked to verbal memory ability.(15)

>Reasoning and Problem Solving

Executive functioning encompasses higher-level cognitive functions such as reasoning and problem solving, which are complicated and need numerous steps. To fix a problem, you must first identify and analyse it before determining a solution.

Perception provides the foundation for reasoning. A person suffering from schizophrenia and experiencing psychosis may struggle to distinguish between reality and hallucinations and delusions. This makes it harder to complete thinking activities.(14)

>Social Cognition

When we engage with other people, our brains process and remember information about them.

We then utilize this information to better understand others and determine how to connect with them. This is known as social cognition. For example, social cognition refers to how we interpret another person’s beliefs and attitudes toward us and the world. It’s also how we express our emotions and transmit them to others. Social cognitive impairment might interfere with daily functioning. Schizophrenia can cause issues in social cognition, such as

- managing emotions,
- comprehending others feelings,
- recognizing emotions in others’ faces and voices.(15)

TYPES OF SCHIZOPHRENA

- 1.Paranoid schizophrenia
- 2.Disorganized schizophrenia
- 3.Catatonic schizophrenia
- 4.Hebephrenic schizophrenia
- 5.Schizophreniform disorder
- 6.Delusional disorder
- 7.Residual
8. Childhood Schizophrenia
- 9.Undifferentiated
- 10.Disorganized
- 11.Schizotypal personality disorder

Paranoid Schizophrenia :

The prevalence of delusions and hallucinations, known as positive symptoms, is the most prevalent and noticeable symptom of paranoid schizophrenia. Hallucinations can be visual, but in this variety of schizophrenia, they are most commonly auditory. Hearing voices that a person believes to be genuine but no one else can hear is common. Delusional thoughts are also common in this group, and they are frequently paranoid. For example, a person suffering from paranoid schizophrenia may believe in conspiracy theories or that someone is out to get them, despite evidence to the contrary.

Paranoid schizophrenics are frequently better able to live normal lives or appear normal to peers and



acquaintances than other types of schizophrenia. Because the starting age is usually older, it is possible that these persons have learnt to operate quite well while concealing their delusional thoughts and beliefs.(17)

Disorganized Schizophrenia :

The most common sign of disorganized schizophrenia is jumbled thoughts. There may also be hallucinations and delusions, but they are less severe than those seen in paranoid schizophrenia. Disorganized ideas result in disorganized speech and behaviours. Speech and behaviours may be appropriate, yet speech may be so disordered that it is sometimes incomprehensible. (16) This subtype is also characterized by poor emotional processing and expression. This type of patient may appear emotionally disturbed or inappropriate. They do not always demonstrate the appropriate emotional response in everyday settings. If there is no emotional response or a lower response than predicted, this is known as flat affect. This is a negative symptom type due to the lack of a normal response. However, the response may be unexpected, such as laughing at a terrible situation. (18)

Catatonic Schizophrenia :

Catatonic schizophrenia is characterized mostly by abnormal movements. A person's activity level can range from utter inactivity to hyperactivity. These states can be extreme, such as catatonic stupor, in which a person does not move at all, or the inverse, catatonic excitement with excessive movement. Catatonic schizophrenia symptoms may include

- Repetitive movements
- Resistance to changing appearance
- Holding a position or pose for extended periods of time
- Adopting unusual body positions or facial expressions
- Mimicking another person's speech or movements. (19)

Hebephrenic Schizophrenia

Hebephrenic schizophrenia, often known as disorganized schizophrenia, is characterized by chaotic speech, thoughts, and behaviour. Symptoms of hebephrenic schizophrenia include

- Having trouble with day-to-day tasks like self-care and hygiene
- Moving from thought to thought incoherently or without logic
- Exhibiting emotional responses that are inappropriate to a situation
- Misusing words or using made-up or nonsense words
- Pacing or walking in circles
- Repeating things over and over (20)

Schizophreniform disorder:

Schizophreniform disorder is characterized by schizophrenic symptoms that last between one and six months. Schizophrenia is a chronic mental health disease. If Schizophreniform disorder symptoms persist for more than 6 months, a person may be diagnosed with schizophrenia. People with Schizophreniform disorder experience psychosis. This causes a person to think things that are not true and to have sensory experiences that no one else has. For example, people may see or hear things that are not actually there. Other mental health symptoms could include despair, lack motivation, or paranoia. (21)

Delusional disorder:

If you have delusional disorder, you have difficulty distinguishing between reality and imagination. People with delusional disorder frequently have non-bizarre delusions. Nonbizarre delusions include events that could happen in real life, such as being followed by someone. However, for people suffering with delusional condition, these scenarios are either incorrect or exaggerated. When it comes to socializing, people with delusional condition generally operate well and do not exhibit unusual behaviour. Many times, if the subject of their delusion is not mentioned in



conversation, they may show no evidence of being deluded. (22)

Residual schizophrenia:

A residual schizophrenia diagnosis is reserved for people who do not exhibit any obvious symptoms. This could be a patient who was previously diagnosed with schizophrenia but whose symptoms have greatly decreased, or someone who has never had severe symptoms. This person may suffer a wide range of schizophrenic symptoms, including hallucinations, delusions, disordered thoughts, and catatonia, but they are not severe or noticeable. Residual schizophrenia can worsen. (23)

Childhood Schizophrenia:

Women typically get schizophrenia in their 20s to 30s, while men develop it in their late teens to early 20s. It is quite rare to detect indications of schizophrenia at a young age, although it is conceivable. Most children diagnosed with this rare and severe illness are aged seven to thirteen. The symptoms are similar to those observed in adults with schizophrenia, with the primary variations being the age of start and the severity of the symptoms. Although the symptoms are similar, because they are more severe and occur in children, pediatric schizophrenia can result in substantial developmental problems. The impact on a child's development and behaviour is significant and can have long-term consequences. (24)

Diagnosis and treatment are critical for a child's long-term improvement and appropriate development. However, making a diagnosis might be difficult. The illness first appears as developmental delays, which can have a variety of causes. It is also commonly confused with autism spectrum disorders. The classification of schizophrenia kinds may no longer be official, according to the most recent edition of the diagnostic manual, but it is nevertheless relevant for mental health professionals and patients. It

allows clinicians to properly explain patients and interact with one another. Understanding the type of schizophrenia being diagnosed allows patients and their family to better grasp the condition, what it means, and what the treatment goals are. (25)

Undifferentiated schizophrenia:

Undifferentiated schizophrenia is a traditional subtype of schizophrenia that is no longer included in the Diagnostic and Statistical Manual of Mental Disorders. When a person was diagnosed with undifferentiated schizophrenia, it indicated they had symptoms of the condition (such as hallucinations, delusions, or disorganized speech), but did not match the full criteria for one of the schizophrenia subtypes. According to research from 1991 Trusted Source, those who were diagnosed with undifferentiated schizophrenia had an early history of behavioural issues. The disease was frequently persistent and stable (as opposed to intermittent symptoms). (26)

Disorganized schizophrenia:

"Disorganization" is a sign of schizophrenia that describes incoherent and irrational thoughts and behaviours. They can have a significant impact on a person's daily life and connections with this disease. While this issue was originally considered a subtype of schizophrenia, mental health practitioners no longer utilize categories to diagnose or describe the disorder. Disorganized schizophrenia causes severe cognitive, behavioural, and emotional symptoms. They also have a tendency to display their ideas and feelings in ways that others find perplexing, strange, or upsetting, such as speaking in unexpected patterns and smiling or scowling at inappropriate moments. (27) Disorganized behaviour can manifest as the following:

- A decline in overall daily functioning
- Unpredictable or inappropriate emotional responses
- Lack of impulse control
- Behaviours that appear bizarre or lack purpose



▪Routine behaviours such as bathing, dressing, or brushing teeth can be severely impaired or lost.

Disorganized schizophrenia is more likely to develop during the early stages of the illness, between the ages of 15 and 25. Early onset is traditionally associated with a worse prognosis due to lower educational success, more severe negative symptoms, and cognitive deficits (27)

Schizotypal Personality Disorder:

Individuals with schizotypal personality disorder may be labeled as weird or eccentric, and they frequently hold magical ideas or strong superstitions. They may display unusual behaviours, have few friends, and experience anxiety in social situations. Unlike schizophrenia, people with schizotypal personality disorder do not experience delusions or hallucinations. STPD is a personality condition that influences one's behaviour. (28) People with STPD exhibit

behaviours that others may consider peculiar or odd, such as:

- discomfort with and difficulty forming close relationships
- unusual or magical beliefs, such as believing in superstitions or telepathy
- excessive social anxiety
- odd or unusual behaviour
- unusual thinking patterns
- suspiciousness
- distorted perceptions that are not hallucinations
- unusual speech
- unusual ways of expressing themselves

The Prevalence of schizotypal personality disorder is approximately 3.9% worldwide, with men at higher risk (4.2%) compared to women (3.7%).[21] Cluster A personality disorders are common among individuals experiencing homelessness (29)

Causes of schizophrenia:

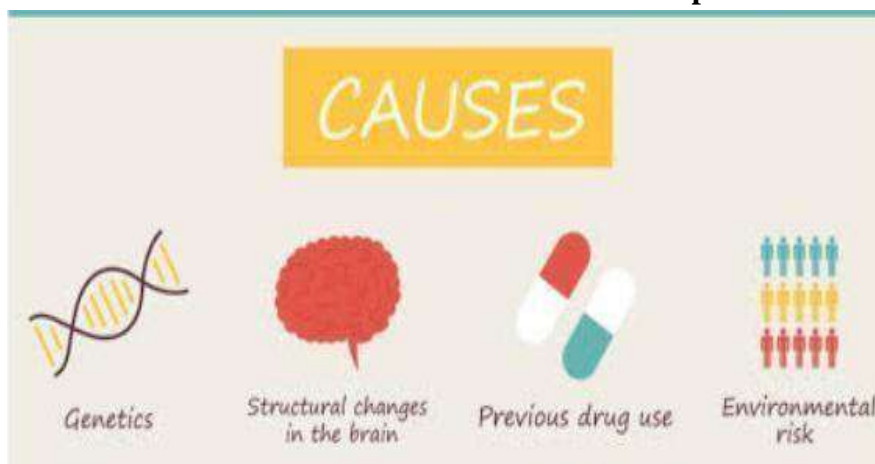


Figure 5: causes of Schizophrenia

The actual cause of schizophrenia remains unknown. However, like cancer and diabetes, schizophrenia is a real illness with a biological basis. Researchers discovered many characteristics that appear to increase a person's risk of developing the illness. They are:

1.Genetics (heredity): Schizophrenia can run in families, which increases the risk that it will be handed on from parents to children. (30)

2.Brain Chemistry and Circuits: People with schizophrenia may be unable to manage brain chemicals known as neurotransmitters, which control specific routes, or "circuits," of nerve cells that influence thought and behaviour. (31)

3.Brain abnormality: Research has discovered aberrant brain structure in patients with schizophrenia. However, this does not apply to all individuals with schizophrenia. It can affect persons who do not have the condition. (32)

4.Environment: Viral infections, marijuana, smoking, childhood trauma, social defeat, malnutrition, vitamin D insufficiency, social cognition, and a lower intelligence quotient may all have a role in the onset of schizophrenia in those with predisposed genetics. Schizophrenia is more likely to appear when the body is going through hormonal and physical changes, such as during adolescence and early adulthood. (33)

5.Drug and alcohol use: Some persons who use cannabis or other recreational drugs may acquire

schizophrenia symptoms. Researchers are still unsure whether recreational drug usage causes schizophrenia or if those who develop schizophrenia are more likely to use recreational drugs.(34)

6. Substance abuse: Cannabis, cocaine, and amphetamines can cause schizophrenia in vulnerable people. (34)

Risk factors

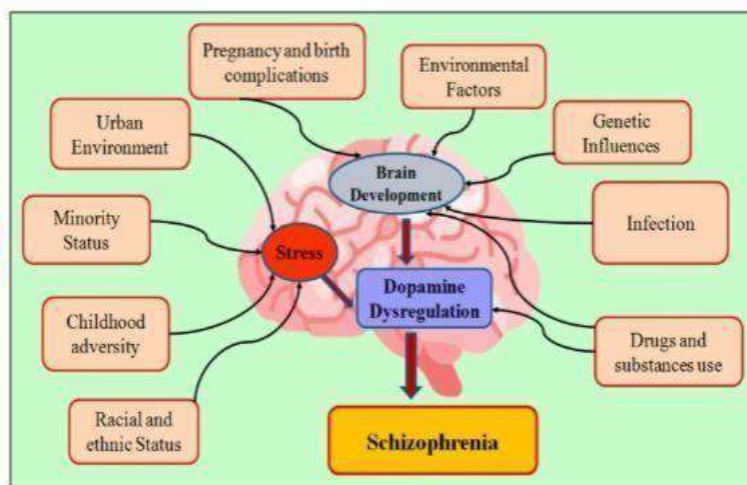


Figure 6: Risk factors of Schizophrenia

1.Genetics

People with a family history of schizophrenia are more likely to develop the disorder.

Approximately 10-14% of people with schizophrenia have a family relative who has the condition.

There is a link between schizophrenia and other mental health issues. People with schizophrenia are more likely to have a family member who has bipolar disorder or another mental health condition. (35)

2.Childhood ADHD (Attention-Deficit/Hyperactivity Disorder)

Research suggests that children with attention deficit hyperactivity disorder (ADHD) are more likely to develop schizophrenia, while the link is not totally evident. One study found that children

with ADHD were 4.3 times more likely to develop schizophrenia than those without ADHD. (35)

3.Life stressors

Researchers discovered linkages between substantial life stressors and an increased incidence of schizophrenia. This risk is higher for persons with a family history of schizophrenia. Stressors may include living in

- poverty
- emotional neglect or isolation
- family violence
- trauma (35)

4.Smoking and cannabis use

There are correlations between schizophrenia and tobacco use. It is uncertain whether cigarette smoking increases the risk of schizophrenia. People with schizophrenia may be more likely to smoke as a kind of self-medication.

There may be a link between cannabis intake and schizophrenia. According to research, cannabis may induce schizophrenia in certain people and intensify its symptoms. (36)

5.Environmental factors

Environmental variables may raise the likelihood of developing schizophrenia. Some environmental factors that could raise the risk include:

Maternal behaviour and health: A birthing parent's health during pregnancy may influence the infant's development, increasing the risk of schizophrenia. Complications from childbirth, infections, and disorders like preeclampsia may all contribute to the syndrome.

Family environment: Where a person lives and grows up may influence the risk of schizophrenia. People who live in cities are particularly vulnerable.

Early trauma: Childhood trauma, such as abuse, an insecure home life, poverty, or racism, can all raise the risk.

Substance abuse: may cause brain alterations that heighten the risk of schizophrenia. Research has discovered an exceptionally strong link between cannabis consumption and the condition.

Infections: Certain infections, whether acquired during pregnancy or later in life, may promote schizophrenia (37)

6. Fetal abnormalities

Congenital deformities and small head circumference are two fetal defects that can raise the risk of schizophrenia. (38)

7. Maternal stress: Stress during pregnancy may raise the risk of schizophrenia in offspring. (38)

Management of schizophrenia

Management of schizophrenia typically involves a combination of pharmacological and nonpharmacological interventions. Here are some of the common approaches:

A . Pharmacological management

1.Antipsychotic medication:

Antipsychotic drugs are commonly used to treat schizophrenia. They aid in the management of psychotic symptoms as well as the improvement of cognitive and expressive abilities. These drugs regulate neurotransmitter activity in the brain, which scientists believe is the source of both positive and negative schizophrenic symptoms. Doctors choose antipsychotic drugs based on the severity of each patient's symptoms. They choose between two categories:

- 1.first-generation (typical) antipsychotics
- 2.second-generation (atypical) antipsychotics.

1.First-generation antipsychotics:

First-generation antipsychotic medicines are referred to as usual. They primarily target the dopamine pathway in the brain and are useful in treating positive schizophrenia symptoms. Examples of common first-generation antipsychotics.

- haloperidol (Haldol)
- chlorpromazine (Thorazine)
- fluphenazine (Prolixin)
- thiothixene (Navane)
- trifluoperazine (Stelazine)

2.Second-generation antipsychotics

Second-generation, or atypical, antipsychotics are the next step in antipsychotic development. They target the dopamine and serotonin brain networks and are beneficial for both happy and negative symptoms. Some medications, such as clozapine (Clozaril), are recommended by doctors when other therapies have failed to control schizophrenic symptoms. Common second generation antipsychotics are:

- aripiprazole (Abilify)
- risperidone (Risperdal)
- clozapine (Clozaril)
- asenapine (Saphris, Secuado)
- iloperidone (Fanapt, Zomaril)
- lurasidone (Latuda)
- olanzapine (Zyprexa)



- paliperidone (Invega)
- quetiapine (Seroquel)
- ziprasidone (Geodon, Zeldox)

Antipsychotic medication use can change throughout someone's schizophrenia. (40)

2. Antidepressants

Many persons with schizophrenia exhibit symptoms of depression. Doctors can treat these symptoms with antidepressants, which change brain chemicals associated with emotions. The most commonly prescribed types of antidepressants are selective serotonin reuptake inhibitors, or SSRIs. They include:

- Citalopram (Celexa)
- Escitalopram (Lexapro)
- Fluoxetine (Prozac)
- Paroxetine (Paxil, Pexeva)
- Sertraline (Zoloft)(41)

3. Mood stabilizers

Mood stabilizers are frequently used as an additional medicine to treat schizophrenia. A few examples of mood stabilizers used to treat schizophrenia are:

- Valproic acid
- Lithium
- Carbamazepine
- Lamotrigine

Doctors typically prescribe mood stabilizers along with other medications. (41)

4. Anti-anxiety medications

Anti-anxiety medications are often used in combination with antipsychotics to treat schizophrenia. Some common anti-anxiety medications used to treat schizophrenia include:

Benzodiazepines

These drugs are recognized for their sedative and muscle-relaxing effects. They can help to calm anxious people during acute schizophrenia episodes. Examples include:

- lorazepam (Ativan)
- diazepam (Valium)

- clonazepam (Klonopin)
- alprazolam (Xanax)

Bupirone

This is another common anti-anxiety medication used to treat schizophrenia. (42)

3. Medication management of schizophrenia

Medication management for schizophrenia requires a multifaceted approach to guarantee successful therapy while avoiding negative effects.

1. Dose optimization: determining the best dose to maximize therapeutic benefits while minimizing negative effects.

2. Changing drugs: Changing medications owing to a poor response, unacceptable side effects, or other factors.

3. Side effect monitoring: Consistently identifying and controlling side effects such as weight gain, metabolic abnormalities, and extrapyramidal symptoms.

4. Long-acting injectable antipsychotics (LAIs): Using injectable formulations to increase adherence and alleviate symptoms.

5. Polypharmacy: Using numerous medications to attain the best benefits, with vigilance to avoid excessive polypharmacy. (43)

B. Non pharmacological management

1. Psychosocial interventions:

Once symptoms improve, it is critical to continue taking medication. It is also vital to participate in psychological, social, or psychosocial therapy, such as:

1. Individual treatment: Talk therapy, often known as psychotherapy, can help people modify their mental patterns. Also, learning to cope with stress and recognize early warning signs of symptom recurrence can help people manage their illness.

2. Social skills training: This focuses on improving communication and social interactions, as well as helping persons with schizophrenia participate more fully in daily activities.



3.Family therapy: This therapy teaches families how to cope with schizophrenia. They are also supported.

4. Vocational rehabilitation and supported employment: This type of counseling focuses on assisting people with schizophrenia in preparing for, finding, and maintaining employment. (44)

5.Cognitive behavioural therapy (CBT): This type of talk therapy involves working with a therapist to learn how to replace negative beliefs and actions with more accurate, functioning ones. With the therapist's aid, you learn to:

- Check the reliability of your ideas and perceptions
- Ignore or tolerate unreal voices
- Manage your response to other symptoms.

CBT is not intended to cure schizophrenia or induce remission. There is no cure for this illness. Treatment is aimed to alleviate your symptoms and teach you how to manage them. In most circumstances, it is unrealistic to anticipate your symptoms to disappear completely. Medication is regarded as the major treatment for schizophrenia. CBT is used to augment medications, not replace them. CBT is usually a short-term course of therapy, taking from 6 to 9 months.(45)

6.Cognitive enhancement therapy (CET): This sort of therapy is also known as cognitive remediation. It teaches you how to better identify social cues, or triggers. It also improves your attention span, memory, and capacity to organize your ideas. It mixes computer-based brain training with group sessions. (46)

7.Art therapy: Art therapy allows you to express yourself in fresh and creative ways. It can help you digest your experiences, connect with others, and perhaps alleviate your schizophrenia symptoms. You can visit with an art therapist individually or in small groups.(47)

2. Lifestyle changes:

Lifestyle changes may also help manage symptoms of schizophrenia.

1.Diet and exercise

A thorough evaluation of 59 trials reveals that diet and exercise therapies may help to minimize schizophrenia symptoms. Diet and exercise are also effective approaches to reduce physical health hazards, which may be higher in people with schizophrenia than in the general population.

2.Avoiding smoking

2021 study. According to Trusted Source, around 70-80% of patients with schizophrenia smoke. The study found that smoking exacerbates some symptoms and worsens symptoms connected to mental patterns. For these reasons, avoiding or quitting smoking may benefit people with schizophrenia's mental and physical health.

3.Avoiding drugs and alcohol

People with schizophrenia frequently suffer from substance use disorders. According to research, approximately 47% of people with schizophrenia will struggle with substance abuse at some point during their lives. Substance abuse can exacerbate and repeat symptoms of the illness. It may also raise the possibility of problems, such as hospitalizations and suicide attempts. (48)

CONCLUSION:

Assessing clinical symptoms and subtypes of Schizophrenia Spectrum Disorder (SSD) is essential for understanding its complex nature and guiding effective treatment strategies. Schizophrenia Spectrum disorders, including schizophrenia, schizoaffective disorder, and delusional disorder, are characterized by a range of symptoms, including positive symptoms, negative and cognitive impairments. Understanding the specific symptom profile in each patient helps in diagnosing and differentiating between the subtypes of SSD. In conclusion, thorough clinical assessment is crucial for recognizing the specific manifestations of SSD, enhancing the precision of diagnosis, and optimizing management strategies, thus improving patient outcomes and quality of life



REFERENCES

1. Frith C, Johnstone EC. Schizophrenia: A very short introduction. OUP Oxford; 2003 May 22.
2. Kuperberg GR. Language in schizophrenia part 1: an introduction. *Language and linguistics compass*. 2010 Aug;4(8):576-89.
3. Torrey EF, Yolken RH. Editors' introduction: Schizophrenia and toxoplasmosis. *Schizophrenia bulletin*. 2007 May 1;33(3):727-8.
4. Kuperberg GR. Language in schizophrenia part 1: an introduction. *Language and linguistics compass*. 2010 Aug;4(8):576-89.
5. Marder SR, Cannon TD. Schizophrenia. *N Engl J Med*. 2019 Oct 31;381(18):1753-1761.
6. Marder SR, Cannon TD. Schizophrenia. *N Engl J Med*. 2019 Oct 31;381(18):1753-1761.
7. Velligan DI, Rao S. Schizophrenia: Salient Symptoms and Pathophysiology. *J Clin Psychiatry*. 2023 Jan 18;84(1).
8. Robison AJ, Thakkar KN, Diwadkar VA. Cognition and reward circuits in schizophrenia: synergistic, not separate. *Biol Psychiatry*. 2020 Feb 1;87(3):204-214.
9. McCutcheon RA, Krystal JH, Howes OD. Dopamine and glutamate in schizophrenia: biology, symptoms and treatment. *World Psychiatry*. 2020 Feb;19(1):15-33.
10. Ellis R, D'Arrigo T. Medically reviewed by Jabeen Begum, MD on March 11, 2024.
11. Brazier Y. Medically reviewed by Yalda Safai, MD, MPH. Updated on September 27, 2023.
12. Lewine RR, Fogg L, Meltzer HY. Assessment of negative and positive symptoms in schizophrenia. *Schizophrenia bulletin*. 1983 Jan 1;9(3):368-76.
13. Mäkinen J, Miettunen J, Isohanni M, Koponen H. Negative symptoms in schizophrenia—a review. *Nordic journal of psychiatry*. 2008 Jan 1;62(5):334-41.
14. Simpson EH, Kellendonk C, Kandel E. A possible role for the striatum in the pathogenesis of the cognitive symptoms of schizophrenia. *Neuron*. 2010 Mar 11;65(5):585-96.
15. Rector NA, Beck AT, Stolar N. The negative symptoms of schizophrenia: a cognitive perspective. *The Canadian Journal of Psychiatry*. 2005 Apr;50(5):247-57.
16. Ertel A, Anwar B. The 5 types of Schizophrenia :Published June 27, 2022. Updated May 3, 2024
17. Kholmurodovich DA, Usmanovich OU. Characteristics of Deficit Disorders in Patients with Paranoid Schizophrenia. *Central Asian Journal of Medical and Natural Science*. 2024 an 1;263:55-65.
18. L18.Sheinbaum T, Fresán A, Domínguez T. Assessing disorganized attachment in Mexican individuals with psychosis-risk symptoms: initial psychometric evaluation of a Spanish version of the revised Psychosis Attachment Measure. *Psychosis*. 2024 Apr 8:1-2.
19. Schorr B, Clauss JM, de Billy CC, Dassing R, Zinetti-Bertschy A, Domergny-Jeanjean LC, Obrecht A, Mainberger O, Schürhoff F, Foucher JR, Berna F. Subtyping chronic catatonia: Clinical and neuropsychological characteristics of progressive periodic catatonia and chronic system catatonias vs. non-catatonic schizophrenia. *Schizophrenia Research*. 2024
20. 2026.Fenton WS, McGlashan TH. Natural history of schizophrenia subtypes: I. Longitudinal study of paranoid, hebephrenic, and undifferentiated schizophrenia. *Archives of General Psychiatry*. 1991 Nov 1;48(11):969-77.
21. González SB, Portilla NO, Bravo BG, Laynez MG, Gutiérrez NS, Sánchez FG. Schizophreniform disorder. *Clinical*



- manifestations and diagnosis. Purposely a case. *European Psychiatry*. 2024 Apr;67(S1):S742-.
22. Taşdemir İ, Boylu ME, Merzifonlu Z, Özcanlı T, Turan Ş. Comparative analysis of guardianship recommendations in schizophrenia and delusional disorder: Insights from psychiatric and legal perspectives. *Adli Tıp Dergisi*. 2024 Aug 8;38(2):124-34.
 23. Shah R, Kulhara P, Grover S, Kumar S, Malhotra R, Tyagi S. Contribution of spirituality to quality of life in patients with residual schizophrenia. *Psychiatry Research*. 2011 Dec 30;190(2-3):200-5.
 24. Correll CU, Arango C, Fagerlund B, Galderisi S, Kas MJ, Leucht S. Identification and treatment of individuals with childhood-onset and early-onset schizophrenia. *European Neuropsychopharmacology*. 2024 May 1;82:57-71.
 25. Caschetta MB. Childhood schizophrenia. Medically reviewed by Bhandari S. March 13, 2024.
 26. Fenton WS, McGlashan TH. Natural history of schizophrenia subtypes: I. Longitudinal study of paranoid, hebephrenic, and undifferentiated schizophrenia. *Archives of General Psychiatry*. 1991 Nov 1;48(11):969-77.
 27. Sheinbaum T, Fresán A, Domínguez T. Assessing disorganized attachment in Mexican individuals with psychosis-risk symptoms: initial psychometric evaluation of a Spanish version of the revised Psychosis Attachment Measure. *Psychosis*. 2024 Apr 8:1-2.
 28. Francois Z, Torrico TJ. Schizotypal Personality Disorder. In *StatPearls* [Internet] 2024 May 7. StatPearls Publishing.
 29. Pulay AJ, Stinson FS, Dawson DA, Goldstein RB, Chou SP, Huang B, Saha TD, Smith SM, Pickering RP, Ruan WJ, Hasin DS, Grant BF. Prevalence, correlates, disability, and comorbidity of DSM-IV schizotypal personality disorder: results from the wave 2 national epidemiologic survey on alcohol and related conditions. *Prim Care Companion J Clin Psychiatry*. 2009;11(2):53-67. [PMC free article] [PubMed] [Reference list]
 30. Javeria F, Altaf S, Zair A, Iqbal RK. Understanding schizophrenia: Genetic causes and treatment. *Current Neuropsychiatry and Clinical Neuroscience Reports*. 2019 Jul 5;1(1):612.
 31. Farrell M. *Controversies in Schizophrenia: Issues, Causes, and Treatment*. Routledge; 2024.
 32. Wang Y, Yang Y, Xu W, Yao X, Xie X, Zhang L, Sun J, Wang L, Hua Q, He K, Tian Y. Heterogeneous Brain Abnormalities in Schizophrenia Converge on a Common Network Associated With Symptom Remission. *Schizophrenia Bulletin*. 2024 May 1;50(3):545-56
 33. Sullivan PF, Yao S, Hjerling-Leffler J. Schizophrenia genomics: Genetic complexity and functional insights. *Nature Reviews Neuroscience*. 2024 Sep;25(9):611-24.
 34. Ergelen M, Yalçın M, Gıynaş FF, Kurnaz S, Usta Sağlam NG. Cannabis use and first onset Schizophrenia-like psychosis after traumatic brain injury in a patient with intracranial bullet. *Journal of Substance Use*. 2024 May 3;29(3):408-11.
 35. del Pozo-Herce P, Miguel AG, Gonzalez-Rosas L, Alejandro-Rubio O, Pascual-Lapuerta C, Porrás Segovia A. Grief as a risk factor for psychosis: a systematic review. *Current psychiatry reports*. 2024 Jun 4:1-5.
 36. Johnson EC, Austin-Zimmerman I, Thorpe HH, Levey DF, Baranger DA, Colbert SM, Demontis D, Khokhar JY, Davis LK, Edenberg HJ, Di Forti M. Cross-ancestry



- genetic investigation of schizophrenia, cannabis use disorder, and tobacco smoking. medRxiv. 2024 Jan 18.
37. Robinson N, Ploner A, Leone M, Lichtenstein P, Kendler KS, Bergen SE. Environmental risk factors for schizophrenia and bipolar disorder from childhood to diagnosis: a Swedish nested case-control study. *Psychological Medicine*. 2024 Mar 1:1-0.
38. Sullivan PF, Yao S, Hjerling-Leffler J. Schizophrenia genomics: Genetic complexity and functional insights. *Nature Reviews Neuroscience*. 2024 Sep;25(9):611-24
39. Strube W, Wagner E, Luykx JJ, Hasan A. A review on side effect management of second generation antipsychotics to treat schizophrenia: a drug safety perspective. *Expert opinion on drug safety*. 2024 Jun 2;23(6):715-29.
40. Ward K, Citrome L. Tolerability and safety outcomes of first-line oral second-generation antipsychotics in patients with schizophrenia. *Expert Opinion on Drug Safety*. 2024 Apr 2;23(4):399-409.
41. Sim K, Yong KH, Chan YH, Tor PC, Xiang YT, Wang CY, Lee EH, Fujii S, Yang SY, Chong MY, Ungvari GS. Adjunctive mood stabilizer treatment for hospitalized schizophrenia patients: Asia psychotropic prescription study (2001–2008). *International Journal of Neuropsychopharmacology*. 2011 Oct 1;14(9):1157-64.
42. Abdolizadeh A, Kupaei MH, Kambari Y, Amaev A, Korann V, Torres-Carmona E, Song J, Ueno F, Koizumi MT, Nakajima S, Agarwal SM. The effect of second-generation antipsychotics on anxiety/depression in patients with schizophrenia: A systematic review and meta-analysis. *Schizophrenia Research*. 2024 Aug 1;270:11-36.
43. Jiang N, Jin W, Fu Z, Cao H, Zheng H, Wang Q, Zhang Q, Ju K, Wang J. Effects of Social Support on Medication Adherence Among Patients with Schizophrenia: Serial Multiple Mediation Model. *Patient preference and adherence*. 2024 Dec 31:947-55.
44. Kingdon D. *Psychosocial Management of Psychosis*. In *Seminars in General Adult Psychiatry* 2024 Apr 18 (p. 282). Cambridge University Press.
45. Nwoye EO, Muslehat AA, Umeh C, Okodeh SO, Woo WL. SchizoBot: Delivering Cognitive Behavioural Therapy for Augmented Management of Schizophrenia. *Digital Technologies Research and Applications*. 2024 Apr 11;3(2):24-40.
46. Martini F, Spangaro M, Bechi M, Agostoni G, Buonocore M, Sapienza J, Nocera D, Ave C, Cocchi F, Cavallaro R, Bosia M. Improving outcome of treatment-resistant schizophrenia: effects of cognitive remediation therapy. *European Archives of Psychiatry and Clinical Neuroscience*. 2024 Sep;274(6):1473-81.
47. Sarandöl A, Güllülü RA, Avcı İK, Türk E, Eker SS. The Effects of Art Therapy and Psychosocial Skills Training on Symptoms and Social Functioning in Patients with Schizophrenia and Their Relatives. *Turkish Journal of Psychiatry*. 2024;35(2):102.
48. Gurusamy J, Gandhi S, Damodharan D, Palaniappan M, Ganesan V. Effect of lifestyle modification intervention (LMI) on metabolic syndrome in schizophrenia in a residential mental health care setting—A mixed method study. *Schizophrenia Research*. 2024 Apr 1;266:75-84

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