



## A REVIEW ON COGNITIVE IMPAIRMENT AND QUALITY OF LIFE, MEDICATION ADHERENCE AND THE PRESCRIPTION PATTERN FOR SCHIZOPHRENIA

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### Abstract

Schizophrenia is a severe mental disease marked by cognitive dysfunction, negative and positive symptoms. A person's perspective of their own place in life is reflected in their perception of their quality of life, which encompasses a wide range of factors including personal values and life domains. Cognitive functions are required to perform in the spheres of personal, social and occupational activities of everyday life, while the patients diagnosed with Schizophrenia they are having cognitive impairment, if the patient having severe cognitive impairment, in those patients quality of life affected because quality of life is directly proportional to the cognitive impairment and this can be traded with oral and injectable antipsychotic preparations. Medication Adherence also is one of the major problem in this condition, if the patient doesn't take the medication properly or suddenly stop the medication the cognitive functions will be impaired and this will cause of decrees the quality of life to the patients.

**Keywords:** Schizophrenia, Cognitive impairment, psychiatric disorder, positive and negative symptoms, medication adherence.

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### Introduction

A severe form of schizophrenia is marked by both positive and negative signs as well as cognitive impairments. Physical co-morbidities, frequent hospitalizations, decreased cognitive and occupational functioning, high

treatment costs, an increased risk of suicide and mortality, and a higher mortality rate are all more common in people with schizophrenia and are all linked to a heavy personal and family burden [1].

### Symptoms

#### Positive symptoms

#### Hallucinations

Hallucinations:

People with schizophrenia might have visual, auditory, olfactory illusions like no one else does.

#### The types of hallucinations in schizophrenia include:

#### Auditory [3, 4]

The person most often experience like someone is speaking him or her even though no one is present around the person. They might be angry or hesitated to do things. They might whisper, murmur, or be angry and demanding.

#### Visual

Possible sightings include persons, objects, and lights. They frequently have departed loved ones or friends in their hearts. Additionally, they could struggle to understand depth and distance.

#### Olfactory and Gustatory

This can include pleasant and unpleasant tastes and scents. A person could refuse to eat if they think they are being poisoned.

#### Tactile

As a result, you may feel hands or insects moving on your body.

### **Delusions**

These are false beliefs that are easy to refute and appear strange to most people. The affected person could feel as though they are in someone else's power. They might believe they possess either possess abilities or another identity, like a celebrity or the president, or both.

#### **Delusion Types Include**

##### **Persecutory Delusions**

Conviction that you are being pursued, hounded, hunted, falsely accused, or duped.

##### **Referential Delusions**

when someone believes that a private message meant exclusively for them is being shared through an open form of communication, like song lyrics or a TV host's gesture.

##### **Somatic Delusions**

The sufferer considers they have a dreadful illness or strange health issue, such as worms, snakes, or cosmic ray harm spreading on their skin

##### **Erotomaniac Delusions**

A person might suspect their partner of infidelity or that a famous person has feelings for them. They can also think that those who don't find them attractive are after them.

##### **Religious Delusions**

It is conceivable for someone to think they are controlled by a demon or have a special relationship to a deity.

##### **Grandiose Delusions**

According to them, they are an important player on the global stage, equivalent to a politician or a celebrity.

##### **Confused Thoughts and Disorganized Speech**

Schizophrenia patients may find it difficult to organise their thoughts, which can result in disorganised speech. When you talk to them, they may not be able to comprehend you. Instead, they might seem sleepy or preoccupied. They occasionally have muddled phrases and speak incoherently.

##### **Trouble Concentrating**

For example, someone gets distracted from what they are doing.

##### **Movement Disorders**

Some individuals with schizophrenia may come off as jittery or aggressive.

##### **Negative Symptoms**

##### **Lack of Pleasure**

The person may no longer appear to take pleasure in anything. It's called Anhedonia

##### **Trouble with Speech**

The individual may not express any emotions or talk much, a condition known as alogia.

##### **Flattening**

It may appear as though a person with schizophrenia is severely depressed. They appear to have no emotions when they speak. They could not respond to their surroundings as they normally would, which is referred as a FLAT AFFECT.

### **Withdrawal**

Also known as indifference, this may involve ceasing to make plans with friends or isolating oneself from other people and society.

#### **Struggling With the Basics of Daily Life**

They might quit taking care of themselves [5].

#### **Etiology**

Schizophrenia is assumed to have unknown causes at its core. In certain people who are inclined to schizophrenia, a very traumatic or stressful life circumstance may cause a psychotic episode.

According to a number of studies, abnormalities in a variety of neurotransmitters, including

1. Dopaminergic neurotransmitters
2. Serotonergic neurotransmitters
3. Alpha-adrenergic hyper activity or Glutaminergic neurotransmitters
4. GABA hypo activity neurotransmitters

#### **Brain Development**

Schizophrenia may arise as a result of structural differentiation in certain areas of the brain.

#### **Medication Misuse**

Although investigations enclose shown that medication misuse extends the chance of creating schizophrenia, drugs do not instantly induce schizophrenia.

Cannabis, cocaine, LSD, and amphetamines are just a few of the drugs that might increase the risk schizophrenia symptoms [6].

#### **Risk Factors**

Risk factors involved in the development of schizophrenia include both environmental and hereditary.

#### **Environmental Aspects**

- Birth Date
- Birth Place
- seasonal developments
- Contagious illnesses
- Intricacies during gestation and delivery:  
Complications before and during the birth, such as:
  1. Less birth weight
  2. Premature labor
  3. Reduced oxygen at the time of birth
- Substance abuse
- Stress:  
The main stressful life circumstances, such as:
  1. Grief
  2. Losing a house or a job
  3. Divorce
  4. Relationship's end
  5. Abuse of the body, the mind, or the spirit

#### **Genetic Facets**

How something develops in schizophrenia is enormously exploited by genetics. Up to 80% of cases of schizophrenia are heritable. The likelihood that the condition will be

handed down to the offspring is 13% if only one parent has it. If both parents have it, the risk is more than 20% [7].

### **Pathophysiology**

The progression of schizophrenia is influenced by three basic hypotheses. Dopamine, serotonin, glutamate, and GABA are out of balance in schizophrenia patients, according to the neurochemical abnormality theory.

It suggests that the emergence of schizophrenia involves four primary dopaminergic pathways:

- Mesolimbic route
- Nigrostriatal route
- The meso-cortical pathway
- The tuberoinfundibular pathway

### **Mesolimbic Route**

Positive signs of the condition are attributed to excessive D2 receptor activation.

### **Nigrostriatal Route**

It is thought that low levels of dopamine affect the extrapyramidal system and result in motor symptoms.

### **Meso-Cortical Route**

The detrimental effects of the condition are caused by low amounts of dopamine in the mesocortex.

### **Tuberoinfundibular Pathway**

Blocking the tuberoinfundibular route results in a reduction in tuberoinfundibular dopamine, which raises prolactin levels and may cause other symptoms like amenorrhea and a decrease in libido.

According to data indicating that NMDA receptor antagonists can aggravate both positive, negative signs of the condition, glutaminergic hypoactivity and serotonergic hyperactivity may both contribute to the development of schizophrenia [8].

### **Diagnosis**

There is no laboratory test that can conclusively demonstrate the presence of the condition; rather, the diagnosis of schizophrenia is dependent on a constellation of signs and symptoms. The DSM-IV criteria for schizophrenia include the presence of specific defining symptoms for longer than six months as well as proof of social or occupational functional impairment [9].

Schizophrenia has to be checked out along with other mental conditions, and its symptoms cannot be ascribed to drug usage, medication side effects, or a medical ailment. schizophrenia diagnosis might call for.

### **Physical Exam**

This might be done to look for related problems and help rule out any other illnesses that could be the reason for the symptoms.

### **Tests and Screenings**

These could involve alcohol and drug testing as well as tests to rule out conditions that have similar symptoms. Additionally, the doctor can request imaging tests like an MRI or CT scan.

### **Psychiatric Evaluation**

A mental health or medical specialist will assess a patient's look and demeanour, as well as their thoughts, moods, delusions, and hallucinations. They will also ask about their use of drugs or alcohol, as well as their propensity of engaging in violence or committing suicide. Also included in this is a discussion of their personal and familial histories.

### **Schizophrenia Diagnostic Requirements**

A physician or mental health expert may use the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) standards [10].

### **Standard Treatment Guidelines**

#### **Psychotherapy**

Psychotherapy is a kind of mental health treatment, and talk therapy is another term for it.

It is commonly used to treat mental diseases, either alone or in combination with other medications.

During psychotherapy sessions, you converse with a medical expert or a licenced mental health specialist in order to pinpoint and correct troublesome thinking.

People with mental diseases are able to: Recognise the attitudes, emotions, and actions that contribute to their condition and learn how to alter them via psychotherapy.

Recognise the problems or events in their lives that may have led to their sickness, such as a critical illness, the loss of a loved one, a job loss, or a divorce, and help them realise which, if any, of these problems they may be able to address or improve. Possess strong coping mechanisms and learn to tackle challenges. Find life's strength and joy again.

#### **Types of Therapy**

Numerous delivery methods can be used for therapy, including:

- Individual therapy
- Group therapy
- Marital therapy
- Family therapy

#### **Individual Therapy**

Only the patient and the therapist are involved in an individual therapy session.

#### **Group Therapy**

Several patients may receive therapy together in a group setting. Patients can talk about their experiences and discover that others have gone through similar things and feel the same way they do.

#### **Marital or Couples Therapy**

Therapy for spouses and partners that focuses on marriage and couples teaches them how to live with the mental illness of a loved one as well as how to modify their communication and conduct.

Couples who are having relationship problems can also benefit from this kind of treatment.

### **Family Therapy**

The group that supports individuals with mental diseases healing contains the home as a crucial element. Family members may find it helpful to comprehend what their adored one is reaching via, how they may cope, and what they can do to support.

### **Types of Psychotherapy**

Several types of psychotherapy include:

- 1) Psychodynamic therapy
- 2) Interpersonal therapy
- 3) Cognitive-behavioral therapy
- 4) Dialectical behavior therapy
- 5) Supportive therapy

### **Psychodynamic therapy**

Psychodynamic therapy is predicated on the idea that you are experiencing emotional difficulties as a result of unresolved, typically unconscious conflicts, frequently dating back to your childhood. By discussing your experiences, the therapist hopes to help you better understand and control these emotions. In spite of the fact that it may go on for years, psychodynamic treatment lasts at least a few months.

### **Interpersonal therapy**

The focus of interpersonal therapy is on how you behave and interact with your family and friends. In a short amount of time, this therapy aims to boost your self-esteem and communication abilities. It typically lasts 3 to 4 months and is effective for depression brought on by loss, marital strife, significant life events, and social isolation [11-16].

Interpersonal and psychodynamic therapy assists in treating mental disease brought on by:

- A) Grief or loss
- B) Marital issues
- C) Changing roles, such as becoming a parent or caregiver

### **Cognitive-behavioral therapy**

This kind of treatment helps people with mental illnesses identify and fix any erroneous beliefs they may have about the way the world works and about themselves. The therapist helps you create new ways of thinking by bringing to your notice both the "correct" and "wrong" beliefs you have about both yourself and other people [17, 18].

People with mental illnesses that cause discomfort, impairment, or interpersonal problems, as well as those who think and behave in ways that exacerbate and prolong mental disease, should take into consideration cognitive behavioural treatment. These people might be of any age.

who use antidepressant medicine as the only form of therapy for their depression or anxiety problems, or in addition to it, depending on how severe they are [19].

### **Dialectical behavior therapy [20, 23]**

Cognitive behavioural treatment (CBT) for high-risk and difficult-to-treat patients includes dialectical behaviour therapy (DBT). "Dialectical" refers to the belief that acceptance and transformation, two very different

approaches to therapy, work better together than they do alone. Keeping a daily diary, attending individual and group therapy sessions, and receiving phone coaching are all part of DBT's strategy for helping you break bad habits like lying and self-harm.

Early DBT focus areas were borderline personality disorder and suicidal behaviours. To address various mental health problems that put an individual's protection, connections, power to work, and emotional fitness at peril, it has been altered.

Comprehensive DBT focuses on four ways to enhance life skills:

Distress tolerance

Emotion regulation

Mindfulness

Interpersonal effectiveness

### **Distress tolerance**

Experiencing strong emotions, such as rage, without behaving rashly or relieving one's misery by harming oneself or abusing drugs or alcohol is known as distress tolerance..

### **Emotion regulation**

Emotion regulation is the process of identifying, naming, and modifying emotions.

### **Mindfulness**

Developing greater self-awareness and attention to the present moment means practising mindfulness.

### **Interpersonal effectiveness**

Managing conflict and behaving assertively are key components of interpersonal effectiveness..

### **Supportive therapy**

Doctor Counsel on how to learn to manage anxiety and unhelpful thoughts.

- ❖ Alternative and complementary forms of therapy
- ❖ Animal-assisted therapy
- ❖ Art and music therapy

### **Alternative and complementary forms of therapy**

This treatment is beneficial and can be used in addition to routine psychotherapy.

### **Animal-assisted therapy**

Animals like dogs, horses, and others can calm people and aid with anxiety and sadness.

### **Art and music therapy**

Your sadness and other feelings can be expressed in this treatment in order to be processed. With the lowest effective dose, antipsychotic drug therapy seeks to properly manage signs and symptoms. The psychiatrist may test out various drugs, dosages, or combinations over time to achieve the desired results. Antidepressants and other anxiety or depression drugs may also be helpful. Before symptoms start to improve, it can take a few weeks. Since these medications have significant side effects when used for extended periods of time, they are only prescribed for short durations of time [24].

### **Second-generation antipsychotics**

Second generation anti-psychotics have lower risk of side effects than first generation anti-psychotics.

Second-generation antipsychotics include:

- Aripiprazole (Abilify)
- Clozapine (Clozaril, Versacloz)
- Olanzapine (Zyprexa)
- Quetiapine (Seroquel)
- Risperidone (Risperdal)

### **First-generation antipsychotics**

The neurological side effects of these first-generation antipsychotics are quite severe, such as movement disorders (TARDIVE DYSKINESIA) that may or may not be reversible.

First-generation antipsychotics include:

Chlorpromazine

Haloperidol

These antipsychotics are frequently less expensive than second-generation antipsychotics, particularly the generic varieties, which might be a crucial factor when long-term treatment is required.

### **Long-acting Injectable antipsychotics**

Some antipsychotic medications can be injected intramuscularly or subcutaneously. Depending on the prescription, they are frequently taken every two to four weeks.

Typical drugs offered for injection include:

Aripiprazole (Abilify Maintena, Aristada)

Haloperidol decanoate

Risperidone (Risperdal Consta, Perseris).

### **Quality of Life**

Quality of life (QOL) incorporates a wide range of elements, including personal values and life domains, and it represents how an individual perceives his or her position in society (WHO, 1995). QOL has been widely employed in clinical practice and research as an outcome measure. In Western countries, studies have compared the quality of life (QOL) of schizophrenia patients with healthy controls. Yet, it is clear that economic and socio-cultural factors have a significant role in determining QOL, making it impossible to generalize Western findings to other regions of the world with distinct socio-cultural and economic contexts [25].

A person's perception of their own place in life in relation to the culture and system of values in which they live, as well as their own goals, expectations, standards, and interests, can be characterized as their quality of life, according to the definition given by the author in his or her book *Quality of Life* [10]. A thorough treatment strategy must address decreased quality of life, which is frequently a significant cause or effect of psychopathology. The multi-dimensional assessment of outcome used in psychiatry to determine therapy efficacy typically includes the concept of quality of life (QOL). When treating individuals who have

long-term illnesses like schizophrenia that considerably reduce their quality of life, the QOL assessments are particularly crucial. Where people live, work, and the activities they engage in are all impacted, as well as every element of daily life.

The severity of schizophrenia, its specific symptoms (both positive and negative), psychiatric co-morbidity (such as depression, anxiety disorders, and substance use disorders), cognitive decline, drug side effects, general medical conditions, coping mechanisms, and particular sociodemographic and clinical characteristics, such as low education, celibacy, isolation, poverty, and stressful life events, all lower quality of life [26].

Age, sex, marital status (married/unmarried/divorce/widow), parenting, education (classified as less than high school, high school, and college), area (urban/rural), monthly income, religion, physical examination, and mental status examination are all factors in determining quality of life.

### **Cognitive Impairment [27-29]**

Everyday activities in the personal, social, and professional domains all involve the use of cognitive abilities.

Cognition can be broadly split into two categories:

- Neuro-cognition
- Social cognition

Information processing, attention, executive functions, comprehension, learning, and memory are the primary Neuro-cognitive processes.

The group of cognitive functions involved in interacting with the social world are referred to as social cognition.

Bettering cognitive functioning may improve patients' functioning in daily living activities, increasing their likelihood of success in the workplace and in independent living. Cognitive functions are responsible for better day-to-day functioning and are related to functioning impairment in daily living activities. In order to improve the efficiency of cognitive rehabilitation, the cognitive functions that mediate these disorders are identified and targeted for repair.

The Brief Assessment of Cognition in Schizophrenia (BACS) is a quick assessment tool that takes around 20 minutes to complete, evaluates all the cognitive domains that are often impaired in schizophrenia, and has been shown to be just as accurate as more extensive tests of cognition.

### **Attention**

Impaired attention is one of schizophrenia's main cognitive problems. Schizophrenia patients are predisposed to have short attention spans genetically, even before the first psychotic episode. By the time patients experience their first psychotic episode, attention problems are frequently noticeable and of a moderate level.

### **Working Memory**

There is growing evidence that the working memory issue associated with schizophrenia, specifically verbal working memory, is caused by a fundamental cognitive deficit. The ability to keep and manage educational stimuli is referred to as working memory. This skill requires more "cognitive load" than simple attention span because of the added demands of manipulating the information.

Schizophrenia is more likely to have verbal memory issues, which can range in intensity from mild to severe. Furthermore, these losses go beyond a simple inability to encode the information, unlike attention deficits.

### **Visuospatial Working Memory**

Working memory issues with spatial orientation are very frequently seen in schizophrenia. It is frequently necessary for the subject to keep track of the spatial location of visual information when doing interference tasks. Schizophrenia patients struggle even under light pressures that are beyond their attentional thresholds. Object working memory, a different kind of non-verbal working memory, shows that rather than problems with the working memory system, inconsistencies in people with schizophrenia are a result of perceptual defects. Schizophrenia patients may have issues managing social and interpersonal interactions that call for attention to several streams of information due to their difficulty encoding and then arranging information.

### **Verbal Fluency**

Schizophrenia sufferers find it difficult to communicate on their own. Verbal fluency tests are used to evaluate a person's capacity to utter words belonging to a certain phonological or semantic category. These experiments show that semantic network knowledge retrieval is unsuccessful as well as verbal information storage. Information that is saved may not always be recovered as a result of this incorrect access to semantic networks. It should not be a surprise that poor interpersonal and communal functioning is associated with verbal fluency impairments.

### **Verbal Learning and Memory**

The classic cognitive deficiencies of schizophrenia include poor memory and difficulty learning new languages. Two of the most common results throughout study studies include reduced ability to encode and recall information presented orally and executive functioning deficiencies. These impairments are usually more severe when compared to other categories of cognitive ability. In contrast to many other neuropsychiatric diseases and dementia disorders (as well as normal ageing), the pattern of deficits in schizophrenia appears to entail impaired learning over several exposure trials and poor recall of previously learned information. The unbroken separation of the target stimuli from distractions, however, demonstrates that the encoding of the information looks unaltered.

However, some individuals with a chronic disease and severe functional restrictions do show impairments in recognition memory in addition to a generalised pattern of dysfunction. But in addition to a generalised pattern of severe cognitive impairments and deteriorating functional abilities, some patients with chronic diseases and significant functional limits do exhibit abnormalities in recognition memory. The efficacy of various verbal therapy modalities can be predicted by verbal memory performance, which is connected with social, adaptive, and occupational success [30-35].

### **Medication Adherence**

According to the World Health Organization, medication adherence is "the degree to which the person's behavior corresponds with the agreed recommendations from a health care provider." [36]. Despite recent advancements in schizophrenia treatment over the past few decades, non-adherence is still a common phenomena that is frequently linked to expensive treatment and potentially serious clinical outcomes. In schizophrenia, non-adherence rates are reportedly about 50%. These findings, along with the idea that non-adherence is preventable; make research into this phenomenon a top priority in psychiatry. This research should look at both the risk factors that contribute to it and the effectiveness of interventions meant to lower it [36].

According to the dictionary, compliance is "the degree to which the patient's behavior (in terms of taking medications, adhering to dietary restrictions, or making other lifestyle changes) coincides with medical recommendations. Being illiterate and being older were the two biggest risk factors for non-adherence, along with chewing khat, treatment attitudes, side effects, mislabeling of symptoms, and knowledge of the condition. How much the patient behaves (in terms of taking prescriptions, adhering to diets, or and medication adherence) also depends on these factors. The results of this study suggest that psycho education may help increase antipsychotic drug adherence in schizophrenia [37].

### **Prevalence**

According to estimates, non-adherence rates in people with schizophrenia range from 4% (as seen in a research using depot neuroleptic medications) to 72%. The concept of non-adherence and the standards used to identify it, the techniques used to assess non-adherence, and the observation time are some of the variables that could explain this variability. Additionally, adherence may change as the patient progresses; it is often strong following release from the hospital and tends to go worse over time.

In a prospective trial, 6 months after their first psychotic episode of schizophrenia, one-third of patients admitted to the hospital were not adhering. Similar findings were seen in a second prospective 2-year study: 33.4% of patients ceased going to follow-up appointments or refused to

continue receiving treatment. In a study with male patients who had their first psychotic episode [38].

### **Conclusion**

With this Review we are concluded that Cognitive functions are required to perform in the spheres of personal, social and occupational activities of everyday life, while the patients diagnosed with Schizophrenia they are having cognitive impairment, if the patient having severe cognitive impairment, in those patients quality of life affected because quality of life is directly proportional to the cognitive impairment and this can be traded with oral and injectable antipsychotic preparations. Medication Adherence also is one of the major problem in this condition, if the patient doesn't take the medication properly or suddenly stop the medication the cognitive functions will be impaired and this will cause of decreases the quality of life to the patients, So as a Pharmacist we suggest to the patients that take the medication regularly, if they will take the medication regularly, their cognitive functions will improve.

### **Conflict of Interest**

No conflicts of interest have been declared by the authors.

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