



INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

DEEP STUDY OF SCHIZOPHRENIA

Nikita Sukhdev Kale

Pravara Rural Education Society's College of Pharmacy, Chincholi

Sainath Rajendra Bawake

Shivajirao Pawar College of Pharmacy, Pachegaon

Abstract:

Schizophrenia stands for a long-lasting state of mental uncertainty that may bring to an end the relation among behavior, thought, and emotion; that is, it may lead to unreliable perception, not suitable actions and feelings, and a sense of mental fragmentation. Indeed, its diagnosis is done over a large period of time; continues signs of the disturbance persist for at least 6 (six) months. Once detected, the psychiatrist diagnosis is made through the clinical interview and a series of psychic tests, addressed mainly to avoid the diagnosis of other mental states or diseases. Undeniably, the main problem with identifying schizophrenia is the difficulty to distinguish its symptoms from those associated to different untidiness or roles. Therefore, this work will focus on the development of a diagnostic support system, in terms of its knowledge representation and reasoning procedures, based on a blended of Logic Programming and Artificial Neural Networks approaches to computing, taking advantage of a novel approach to knowledge representation and reasoning, which aims to solve the problems associated in the handling (i.e., to stand for and reason) of defective information.

Key Words: Schizophrenia, brain disorder, Neural Networks, Identification, Symptoms.

Introduction:

Schizophrenia is a brain disorder that strikes people as they are entering the prime of their life and, in many cases, may run a recurrent and ultimately chronic course that will lead to substantial disability. Indeed, this highly destructive mental illness affects the essence of what makes people human, that is, their personality and intellect. The incidence of this disease is roughly one new patient per year per ten thousand human beings. In the one hand it occurs in all cultures, in spite of more schizophrenic ones appearing in the lower socioeconomic classes of the industrialized countries; on the other hand, the admission rates for schizophrenia are higher

in the urban areas than in the rural ones. The gender distribution is approximately equal in both sexes, and the peak of incidence is situated between 15 and 25 years in males, and between 25 and 35 years in females.

There are also several risk factors that must be considered, namely, the genetic ones like predisposing, pregnancy, and birth complications. Indeed, and to some extent, some precipitating circumstances, such as family interactions (e.g., dysfunctional families and expressed emotion, a kind of behavior with overt criticism and hostility), life events (e.g., happenings that provokes a high level of stress), or drug abuse, must also be object of attention.

When working on the diagnosis of schizophrenia, the challenging question with which practitioners are met relies on the similarity between the signs and symptoms among psychic diseases and states. Typically, the earliest act for the diagnosis of schizophrenia proceeds from the detection of a specific outbreak, ordinarily evinced by hallucinations, delusions, disorganized speech, catatonic behavior, abolition, and social separation or even additional personality disorders. The psychiatric diagnosis is made through the clinical interview based on psychopathology, but the problem is that knowledge of psychopathology of anthology depends on the training and experience of the psychiatrist. These limitations “open the door” to mistake and doubt. From here, the practitioners may perform psychic exams intended to detect cognitive flaws, delusional perception, and abnormal changes or thoughts.

Above any kind of dispute, the main problem with the diagnosis of schizophrenia comes from the large number of different mental diseases and states that may mimic its signs, such as epilepsy, drug-induced psychosis, affective psychoses (e.g., bipolar, major depressive disorders), Asperger syndrome, schizoaffective disorder, and Wilson’s disease. To face this situation the practitioner is forced to order extra exams, namely, toxicological tests, electroencephalography (EEG) and brain computed tomography (CT)’s . Also this pinpointing is usually done over a large period of time (at least 6 months), therefore generating a huge amount of data, which has to be treated and interpreted by the practitioner(s).

Facing such a large amount of facts, even experienced psychiatrists have difficulties to make a precise diagnosis and distinguishing between this and other diseases. Unfortunately, there is not too much work done in the area of Medical Informatics to help in this process, although Strous et al. Worked on a system that uses the differences on writing to diagnose schizophrenia.

With this paper we make a start on the development of an unusual or original diagnosis assistance system for schizophrenia. We will present a logic programming based approach in order to represent the knowledge and reasoning, with a focus on the Degree of Confidence (DoC) of the attributes set, that makes a function or a predicate

Definition of Schizophrenia:

A disorder that affects a person's ability to think, feel and behave clearly. The exact cause of schizophrenia isn't known, but a combination of genetics, environment and altered brain chemistry and structure may play a role.

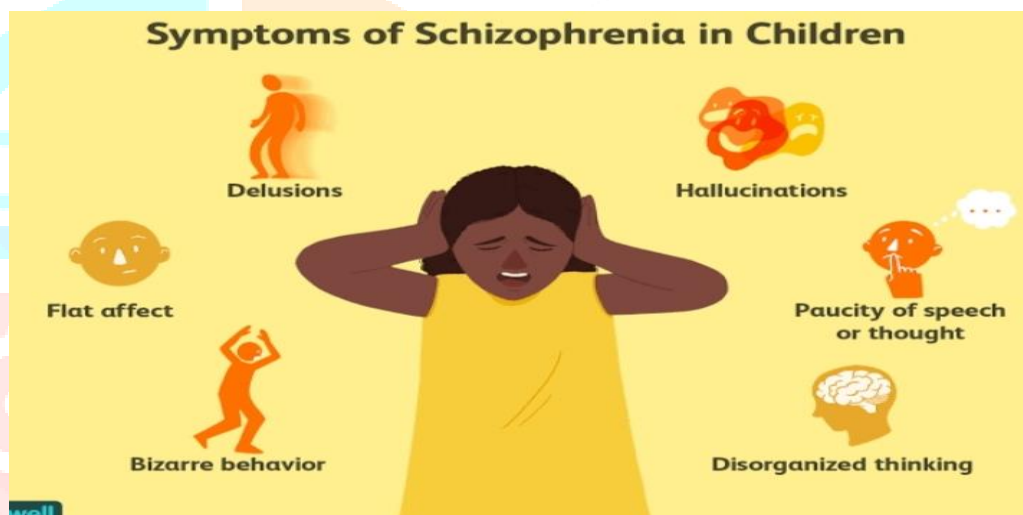
Types of schizophrenia:

1. Paranoid schizophrenia.
2. Hebephrenic schizophrenia.
3. Catatonic schizophrenia.
4. Undifferentiated schizophrenia.
5. Residual schizophrenia.
6. Simple schizophrenia.
7. Cenesthopathic schizophrenia
8. Unspecified schizophrenia.

- A. Paranoid schizophrenia:** This is the most common type of schizophrenia. It may develop later in life than other forms. Symptoms include hallucinations and/or delusions, but your speech and emotions may not be affected.
- B. Hebephrenic schizophrenia:** Also known as 'disorganised schizophrenia', this type of schizophrenia typically develops when you're 15-25 years old. Symptoms include disorganised behaviours and thoughts, alongside short-lasting delusions and hallucinations. You may have disorganised speech patterns and others may find it difficult to understand you. People living with disorganised schizophrenia often show little or no emotions in their facial expressions, voice tone, or mannerisms.
- C. Catatonic schizophrenia:** This is the rarest schizophrenia diagnosis, characterized by unusual, limited and sudden movements. You may often switch between being very active or very still. You may not talk much, and you may mimic other's speech and movement.
- D. Undifferentiated schizophrenia:** Your diagnosis may have some signs of paranoid, hebephrenic or catatonic schizophrenia, but it doesn't obviously fit into one of these types alone.

- E. Residual schizophrenia:** You may be diagnosed with residual schizophrenia if you have a history of psychosis, but only experience the negative symptoms (such as slow movement, poor memory, lack of concentration and poor hygiene).
- F. Simple schizophrenia:** Simple schizophrenia is rarely diagnosed in the UK. Negative symptoms (such as slow movement, poor memory, lack of concentration and poor hygiene) are most prominent early and worsen, while positive symptoms (such as hallucinations, delusions, disorganised thinking) are rarely experienced.
- G. Cenesthopathic schizophrenia:** People with cenesthopathic schizophrenia experience unusual bodily sensations.
- H. Unspecified schizophrenia:** Symptoms meet the general conditions for a diagnosis but do not fit into any of the above categories.

Symptoms:

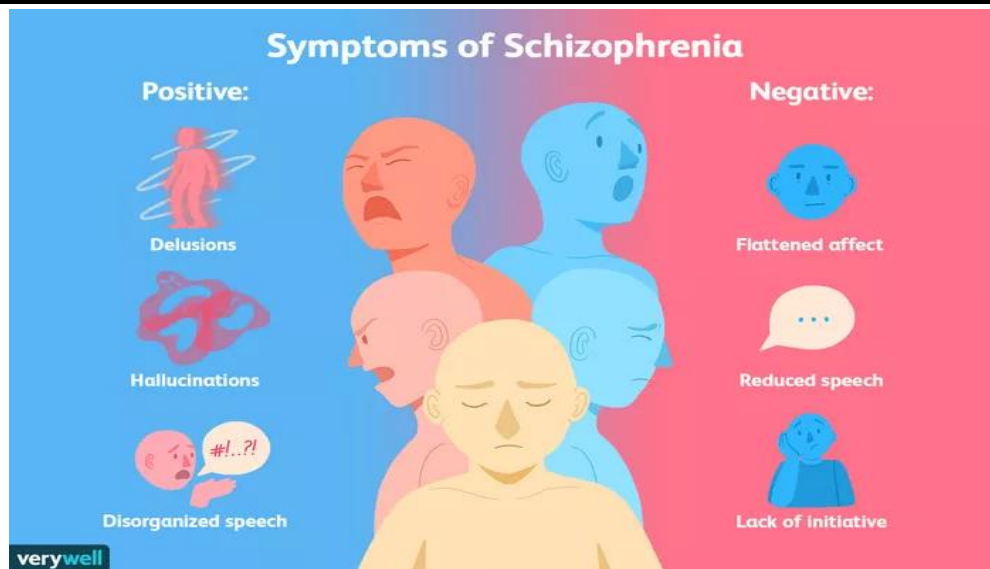


Positive Symptoms of Schizophrenia: Things That Might Start Happening

Positive symptoms are highly exaggerated ideas, perceptions, or actions that show the person can't tell what's real from what isn't. Here the word "positive" means the presence (rather than absence) of symptoms. They can include:

- **Hallucinations.** People with schizophrenia might hear, see, smell, or feel things no one else does. The types of hallucinations in schizophrenia include:
 - **Auditory.** The person most often hears voices in their head. They might be angry or urgent and demand that they do things. It can sound like one voice or many. They might whisper, murmur, or be angry and demanding.
 - **Visual.** Someone might see lights, objects, people, or patterns. Often it's loved ones or friends who are no longer alive. They may also have trouble with depth perception and distance.

- **Olfactory and gustatory.** This can include good and bad smells and tastes. Someone might believe they're being poisoned and refuse to eat.
- **Tactile.** This creates a feeling of things moving on your body, like hands or insects.
- **Delusions.** These are beliefs that seem strange to most people and are easy to prove wrong. The person affected might think someone is trying to control their brain through TVs or that the FBI is out to get them. They might believe they're someone else, like a famous actor or the president, or that they have superpowers. Types of delusions include:
 - **Persecutory delusions.** The feeling someone is after you or that you're being stalked, hunted, framed, or tricked.
 - **Referential delusions.** When a person believes that public forms of communication, like song lyrics or a gesture from a TV host, are a special message just for them.
 - **Somatic delusions.** These center on the body. The person thinks they have a terrible illness or bizarre health problem like worms under the skin or damage from cosmic rays.
 - **Erotomaniac delusions.** A person might be convinced a celebrity is in love with them or that their partner is cheating. Or they might think people they're not attracted to are pursuing them.
 - **Religious delusions.** Someone might think they have a special relationship with a deity or that they're possessed by a demon.
 - **Grandiose delusions.** They consider themselves a major figure on the world stage, like an entertainer or a politician.
 - **Confused thoughts and disorganized speech.** People with schizophrenia can have a hard time organizing their thoughts. They might not be able to follow along when you talk to them. Instead, it might seem like they're zoning out or distracted. When they talk, their words can come out jumbled and not make sense.
 - **Trouble concentrating.** For example, someone might lose track of what's going on in a TV show as they're watching.
 - **Movement disorders.** Some people with schizophrenia can seem jumpy. Sometimes they'll make the same movements over and over again. But sometimes they might be perfectly still for hours at a stretch, which experts call being catatonic. Contrary to popular belief, people with the disease usually aren't violent.



Negative Symptoms of Schizophrenia: Things That Might Stop Happening

Negative symptoms refer to an absence or lack of normal mental function involving thinking, behavior, and perception.

You might notice:

- **Lack of pleasure.** The person may not seem to enjoy anything anymore. A doctor will call this anhedonia.
- **Trouble with speech.** They might not talk much or show any feelings. Doctors call this alogia.
- **Flat:** The person with schizophrenia might seem like they have a terrible case of the blahs. When they talk, their voice can sound flat, like they have no emotions. They may not smile normally or show usual facial emotions in response to conversations or things happening around them. A doctor might call this affective flattening.
- **Withdrawal.** This might include no longer making plans with friends or becoming a hermit. Talking to the person can feel like pulling teeth: If you want an answer, you have to really work to pry it out of them. Doctors call this apathy.
- **Struggling with the basics of daily life.** They may stop bathing or taking care of themselves.
- **No follow-through.** People with schizophrenia have trouble staying on schedule or finishing what they start. Sometimes they can't get started at all. A doctor might call this avolition.

Depression has some of the same symptoms, too. They can be hard to spot, especially in teens, because even healthy teens can have big emotional swings between highs and lows.

Cognitive Symptoms & Thinking Problems

These symptoms reflect how well the person's brain learns, stores, and uses information. Someone with schizophrenia might have a hard time with their working memory. For example, they may not be able to keep track of different kinds of facts at the same time, like a phone number plus instructions. Along with having trouble paying attention, it can be hard for them to organize their thoughts and make decisions.

Diagnosis:

Diagnosis of schizophrenia involves ruling out other mental health disorders and determining that symptoms are not due to substance abuse, medication or a medical condition. Determining a diagnosis of schizophrenia may include:

- **Physical exam.** This may be done to help rule out other problems that could be causing symptoms and to check for any related complications.
- **Tests and screenings.** These may include tests that help rule out conditions with similar symptoms, and screening for alcohol and drugs. The doctor may also request imaging studies, such as an MRI or CT scan.
- **Psychiatric evaluation.** A doctor or mental health professional checks mental status by observing appearance and demeanor and asking about thoughts, moods, delusions, hallucinations, substance use, and potential for violence or suicide. This also includes a discussion of family and personal history.

Diagnostic criteria for schizophrenia. A doctor or mental health professional may use the criteria in the Diagnostic and Statistical Manual of Mental Disorders(DSM-5), published by the American Psychiatric Association.

Treatment:

Schizophrenia requires lifelong treatment, even when symptoms have subsided. Treatment with medications and psychosocial therapy can help manage the condition. In some cases, hospitalization may be needed. A psychiatrist experienced in treating schizophrenia usually guides treatment. The treatment team also may include a psychologist, social worker, psychiatric nurse and possibly a case manager to coordinate care. The full-team approach may be available in clinics with expertise in schizophrenia treatment.

Medications:

Medications are the cornerstone of schizophrenia treatment, and antipsychotic medications are the most commonly prescribed drugs. They're thought to control symptoms by affecting the brain neurotransmitter dopamine. The goal of treatment with antipsychotic medications is to effectively manage signs and symptoms at the lowest possible dose. The psychiatrist may try different drugs, different doses or combinations over time to achieve the desired result. Other medications also may help, such as antidepressants or anti-anxiety drugs. It can take several weeks to notice an improvement in symptoms.

Because medications for schizophrenia can cause serious side effects, people with schizophrenia may be reluctant to take them. Willingness to cooperate with treatment may affect drug choice. For example, someone who is resistant to taking medication consistently may need to be given injections instead of taking a pill. Ask your doctor about the benefits and side effects of any medication that's prescribed.

Second-generation antipsychotics

These newer, second-generation medications are generally preferred because they pose a lower risk of serious side effects than do first-generation antipsychotics. Second-generation antipsychotics include:

- Aripiprazole (Abilify)
- Asenapine (Saphris)
- Brexpiprazole (Rexulti)
- Cariprazine (Vraylar)
- Clozapine (Clozaril, Versacloz)
- Iloperidone (Fanapt)
- Lurasidone (Latuda)
- Olanzapine (Zyprexa)
- Paliperidone (Invega)
- Quetiapine (Seroquel)
- Risperidone (Risperdal)
- Ziprasidone (Geodon)

First-generation antipsychotics:

These first-generation antipsychotics have frequent and potentially significant neurological side effects, including the possibility of developing a movement disorder (tardive dyskinesia) that may or may not be reversible. First-generation antipsychotics include:

- Chlorpromazine
- Fluphenazine
- Haloperidol
- Perphenazine

These antipsychotics are often cheaper than second-generation antipsychotics, especially the generic versions, which can be an important consideration when long-term treatment is necessary.

Long-acting injectable antipsychotics

Some antipsychotics may be given as an intramuscular or subcutaneous injection. They are usually given every two to four weeks, depending on the medication. Ask your doctor about more information on injectable medications. This may be an option if someone has a preference for fewer pills and may help with adherence.

Common medications that are available as an injection include:

- Aripiprazole (Abilify Maintena, Aristada)
- Fluphenazine decanoate
- Haloperidol decanoate
- Paliperidone (Invega Sustenna, Invega Trinza)
- Risperidone (Risperdal Consta, Perseris)
- Psychosocial interventions

Once psychosis recedes, in addition to continuing on medication, psychological and social (psychosocial) interventions are important. These may include:

Individual therapy: Psychotherapy may help to normalize thought patterns. Also, learning to cope with stress and identify early warning signs of relapse can help people with schizophrenia manage their illness.

Social skills training: This focuses on improving communication and social interactions and improving the ability to participate in daily activities.

Family therapy: This provides support and education to families dealing with schizophrenia. Vocational rehabilitation and supported employment. This focuses on helping people with schizophrenia prepare for, find and keep jobs.

Most individuals with schizophrenia require some form of daily living support. Many communities have programs to help people with schizophrenia with jobs, housing, self-help groups and crisis situations. A case manager or someone on the treatment team can help find resources. With appropriate treatment, most people with schizophrenia can manage their illness.

What are the Causes of Schizophrenia?

What exactly causes schizophrenia is not known. Just like the disease, the causes of schizophrenia are also complex. However, researchers believe that a combination of brain chemistry, environment and genetics contributes to the development of schizophrenia. Some of the common probable risk factors sighted by researchers as causes of schizophrenia include genetic inheritance, family relationships, a chemical imbalance in the brain, drug abuse during the teenage years or young adulthood, father's older age, and pregnancy and birth-related complications like exposure to toxins and viruses.



REFERENCES:

1. The textbook of Pharmacology, By K.D. Tripathi.
2. The Indian Pharmacopoeia 2010 edition.
3. <https://www1.health.gov.au/>
4. <https://www.verywellmind.com/what-causes-schizophrenia-2953136>
5. <https://www.who.int/news-room/fact-sheets/detail/schizophrenia>
6. <https://www.nami.org/About-Mental-Illness/Mental-Health-Conditions/Schizophrenia>
7. <https://www.slideshare.net/RuchitaBhavsar/schizophrenia-74881247>
8. <https://www.physio-pedia.com/Schizophrenia>
9. The textbook of Pharmacology, Nirali Prakashan.
10. <https://www.psychiatry.org/>
11. <https://www.mayoclinic.org/diseases-conditions/schizophrenia/symptoms-causes/syc-20354443>
12. <https://www.nimh.nih.gov/health/topics/schizophrenia>

