

8. SCHIZOPHRENIA

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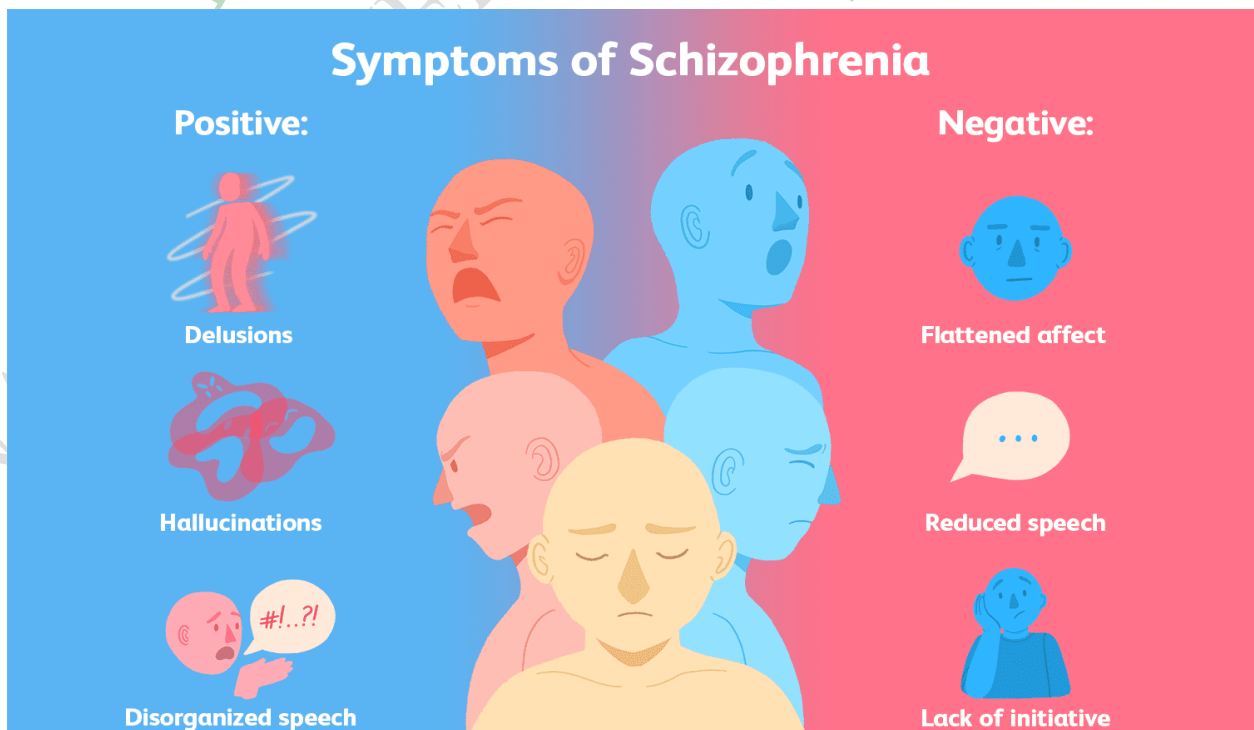
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8. SCHIZOPHRENIA

Definition: ‘schizophrenia’, derived from the Greek words *skhizo* (to split) and *Phren* (mind), meaning the split between the emotions and the intellect.

Introduction:

- Schizophrenia occurs with changes in brain chemistry, specifically, excessive levels of dopamine.
- Schizophrenia is a serious brain disorder that alters the way a person thinks, acts, expresses emotions, perceives reality, and relates to others.
- Schizophrenia is a serious mental illness that interferes with a person’s ability to think clearly, manage emotions, make decisions and relate to others.
- Schizophrenia is a severe long-term mental health condition. It causes a range of different psychological symptoms.
- Schizophrenia most commonly strikes between the ages of 16 and 30, and males tend to show symptoms at a slightly younger age than females. In many cases, the disorder develops so slowly that the individual does not know that they have had it for many years. However, in other cases, it can strike suddenly and develop quickly.
- Schizophrenia affects approximately 1 percent of all adults, globally.
- People with schizophrenia may seem like they have lost touch with reality. Although schizophrenia is not as common as other mental disorders, the symptoms can be very disabling.



8. SCHIZOPHRENIA

SYMPTOMS AND SIGNS

Symptoms and signs of schizophrenia will vary, depending on the individual.

The symptoms are classified into four categories:

- A. Positive symptoms** - also known as psychotic symptoms. For example, delusions and hallucinations.
- B. Negative symptoms** - these refer to elements that are taken away from the individual. For example, absence of facial expressions or lack of motivation.
- C. Cognitive symptoms** - these affect the person's thought processes. They may be positive or negative symptoms, for example, poor concentration is a negative symptom.
- D. Emotional symptoms** - these are usually negative symptoms, such as blunted emotions.

Below is a list of the major symptoms:

- **Delusions** - These are false beliefs that are not based in reality. For example, you think that you're being harmed or harassed; certain gestures or comments are directed at you; you have exceptional ability or fame; another person is in love with you; or a major catastrophe is about to occur. Delusions occur in most people with schizophrenia.
- **Hallucinations** - [hearing or seeing things that don't exist] These include a person hearing voices, seeing things, or smelling things others can't perceive. The hallucination is very real to the person experiencing it, and it may be very confusing for a loved one to witness. The voices in the hallucination can be critical or threatening.
- **Thought disorder** - the person may jump from one subject to another for no logical reason.
- **Disorganized thinking (speech)** - Disorganized thinking is inferred from disorganized speech. Effective communication can be impaired, and answers to questions may be partially or completely unrelated. Rarely, speech may include putting together meaningless words that can't be understood, sometimes known as word salad.

Other symptoms may include:

- **Lack of motivation (avolition)** - the patient loses their drive. Everyday actions, such as washing and cooking, are neglected.
- **Poor expression of emotions** - responses to happy or sad occasions may be lacking, or inappropriate.
- **Social withdrawal** - when a patient with schizophrenia withdraws socially, it is often because they believe somebody is going to harm them.

8. SCHIZOPHRENIA

- **Unawareness of illness** - as the hallucinations and delusions seem so real for patients, many of them may not believe they are ill. They may refuse to take medication for fear of side effects, or for fear that the medication may be poison, for example.
- **Cognitive difficulties** - the patient's ability to concentrate, recall things, plan ahead, and to organize their life are affected. Communication becomes more difficult.

TYPES OF SCIZOPHRENIA

1. Disorganized

- Lack of emotion
- Disorganized speech
- Silly/childlike behavior
- Makes no sense when talking

2. Catatonic

- Waxy flexibility
- Reduced movement
- Rigid posture
- Sometime too much movement

3. Paranoid

- Strong delusions
- Strong hallucinations

4. Undifferentiated / simple

- Disturbances of thought or behavior or emotion
- Does not fit into another category

CAUSES

The cause of schizophrenia is still unclear.

1) Genetics (Heredity)

- Scientists recognize that the disorder tends to run in families and that a person inherits a tendency to develop the disease.
- Similar to some other genetically-related illnesses, schizophrenia may appear when the body undergoes hormonal and physical changes (like those that occur during puberty in the teen and young adult years) or after dealing with highly stressful situations.

2) Biology Chemistry -

- Scientists believe that people with schizophrenia have an imbalance of the brain chemicals or neurotransmitters:
 - dopamine,
 - glutamate and
 - serotonin.

8. SCHIZOPHRENIA

- These neurotransmitters allow nerve cells in the brain to send messages to each other.
- The imbalance of these chemicals affects the way a person's brain reacts to stimuli-- which explains why a person with schizophrenia may be overcome by sensory information (loud music or bright lights) which other people can easily handle.
- This problem in processing different sounds, sights, smells and tastes can also lead to hallucinations or delusions.

3) **Structure –**

- Some research suggests that problems with the development of connections and pathways in the brain while in the womb may later lead to schizophrenia.

4) **Viral Infections and Immune Disorders**

- Schizophrenia may also be triggered by environmental events, such as viral infections or immune disorders. For instance, babies whose mothers get the flu while they are pregnant are at higher risk of developing schizophrenia later in life.
- People who are hospitalized for severe infections are also at higher risk.

THE EARLY WARNING SIGNS OF SCHIZOPHRENIA

The signs of schizophrenia are different for everyone. Symptoms may develop slowly over months or years, or may appear very abruptly. The disease may come and go in cycles of relapse and remission.

Behaviors that are early warning signs of schizophrenia include:

- Hearing or seeing something that isn't there
- A constant feeling of being watched
- Peculiar or nonsensical way of speaking or writing
- Strange body positioning
- Feeling indifferent to very important situations
- Deterioration of academic or work performance
- A change in personal hygiene and appearance
- A change in personality
- Increasing withdrawal from social situations
- Irrational, angry or fearful response to loved ones
- Inability to sleep or concentrate
- Inappropriate or bizarre behavior
- Extreme preoccupation with religion or the occult

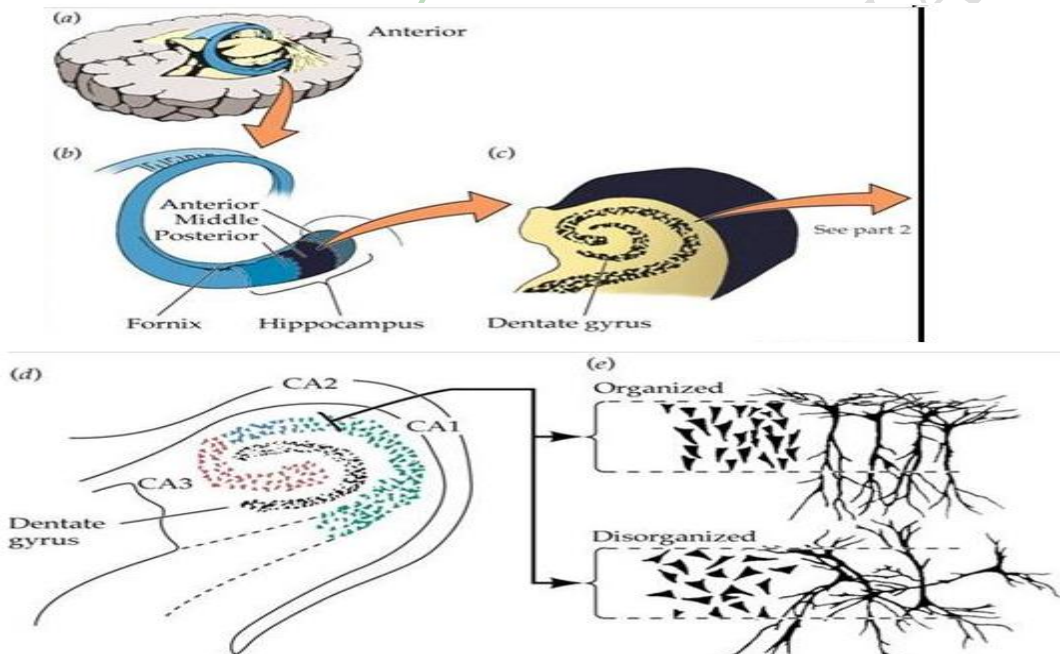
8. SCHIZOPHRENIA

PATHOPHYSIOLOGY

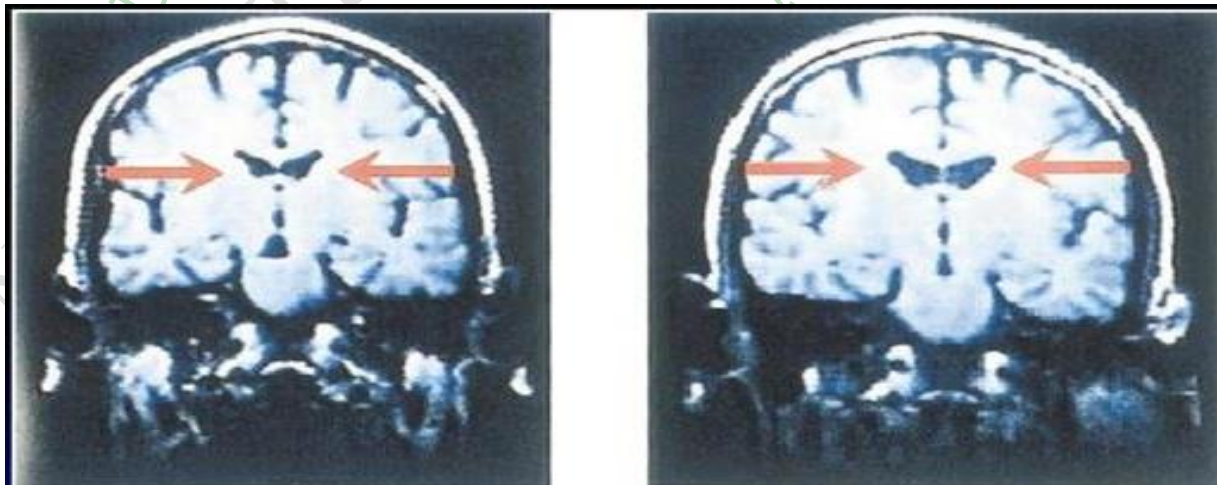
A number of theories attempt to explain the link between altered brain function and schizophrenia, including the dopamine hypothesis and the glutamate hypothesis. These theories are separate from the causes of schizophrenia, which deal with the factors that lead to schizophrenia. The current theories attempt to explain how changes in brain functioning can contribute to symptoms of the disease.

1. Neuropathological hypothesis

- Change in the structure of brain in schizophrenic patient
- Change mainly occur in hippocampus, frontal lobe, temporal lobe



Altered development of hippocampal pyramidal neurons



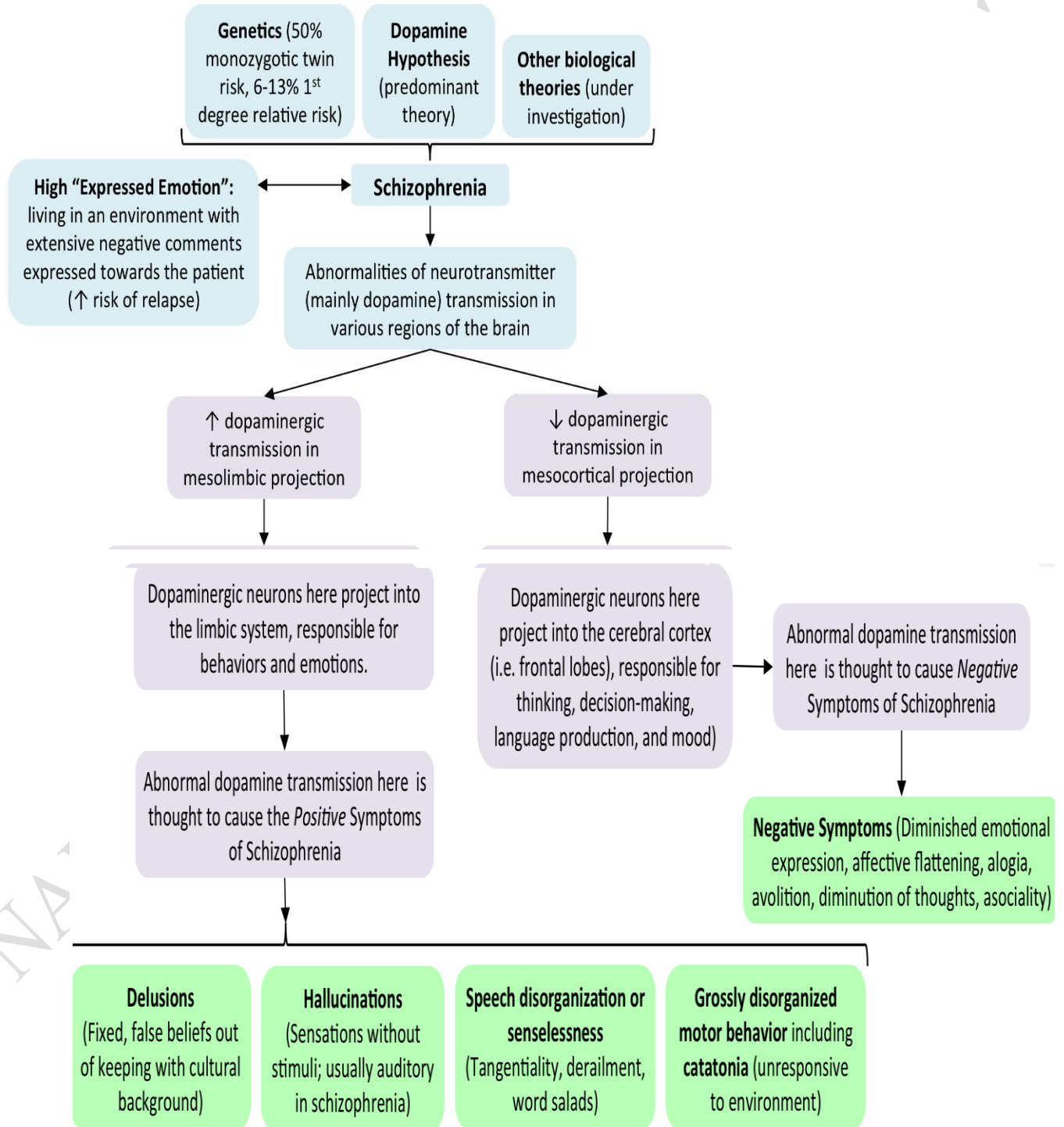
VTA enlargement in monozygotic twins with schizophrenia

8. SCHIZOPHRENIA

2. Neurochemical hypothesis

A. Dopamine & Serotonin hypothesis

- ✓ Dopamine level is increased in mesolimbic & mesocortical pathway of brain.
- ✓ Increased number of DA receptor are present in brain of schizophrenic patient
- ✓ Serotonin is responsible for regulating DA level in brain, DA is responsible for motivation, pleasure, cognition, memory, learning & motor control 5HT 2A receptor are responsible for Schizophrenia

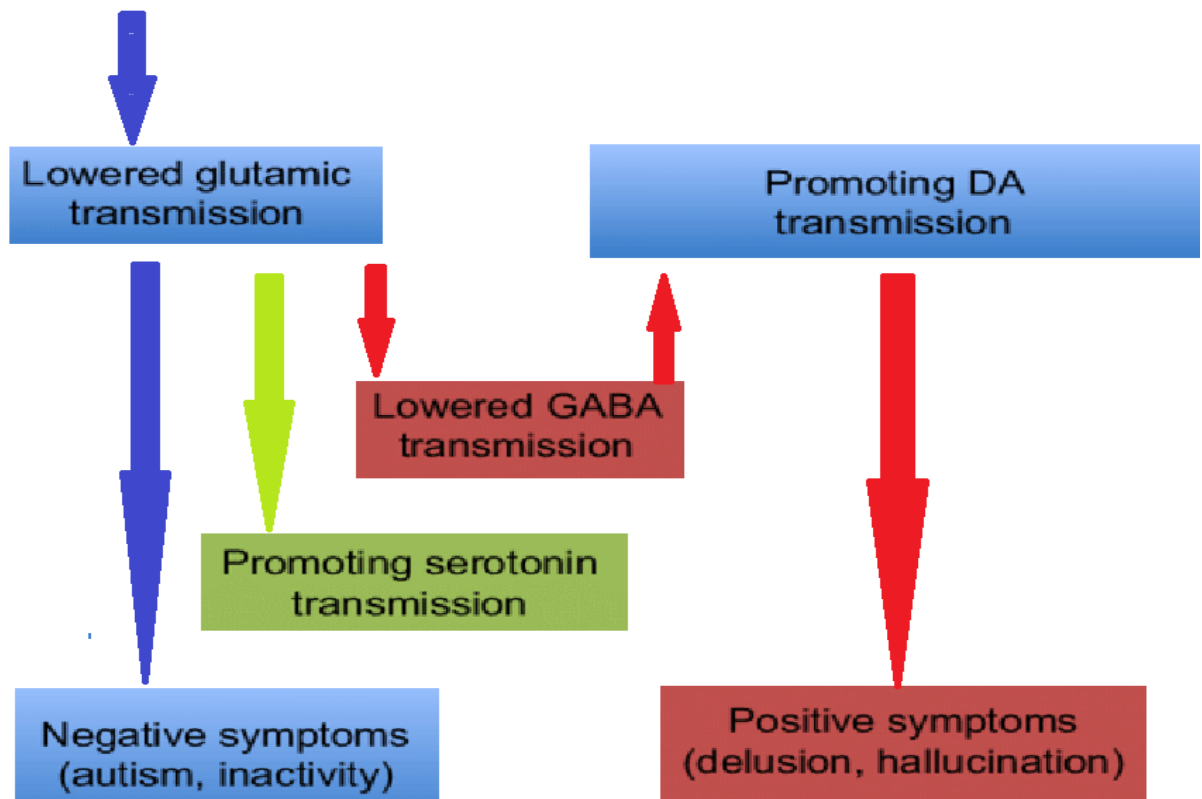


8. SCHIZOPHRENIA

B. Glutamate abnormalities

- Beside the dopamine hypothesis, interest has also focused on the neurotransmitter glutamate and the reduced function of the NMDA glutamate receptor in the pathophysiology of schizophrenia. This has largely been suggested by lower levels of glutamate receptors found in postmortem brains of people previously diagnosed with schizophrenia
- Deficiencies in glutamatergic neurotransmission
 - Dysregulation of DA systems may be secondary to a deficient
 - in the function of the glutamatergic NMDA [N-methyl-D-aspartate]receptor.
 - Noncompetitive NMDA receptor antagonists (like phencyclidine & ketamine) induce both positive and negative symptoms.
 - Unmedicated schizophrenic patients are more sensitive to the effect of NMDA receptor antagonist
 - Adjunctive treatment with NMDA agonist might provide a modest improvement in symptoms.

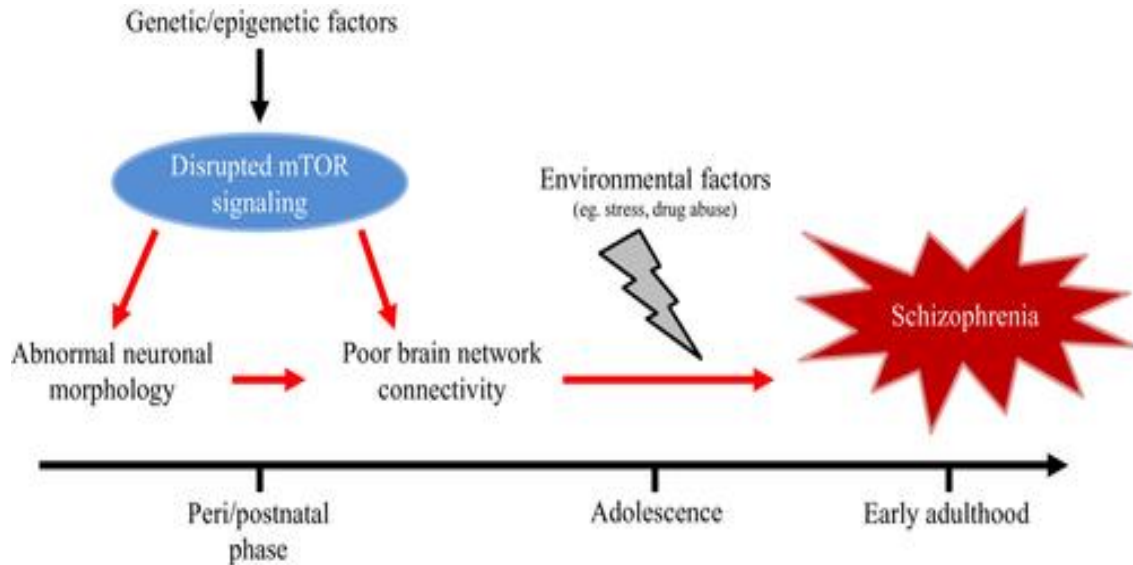
Dysfunction of NMDAR



8. SCHIZOPHRENIA

3. Neurodevelopment theory

- Schizophrenia occurs as result of an utero disturbance during pregnancy.
- Prenatal causes of this disturbances include upper respiratory infection, obstetric complications & neonatal hypoxia



4. Psychosocial theory

- This theories propose that situation such as stress, poor interpersonal skills, confliction family, communication and various socio-economic influence are linked to development of schizophrenia