1. Explain the importance of psychological factors in contributing to the etiology of psychopathology.

**Ans:** The biological viewpoint focuses on mental disorders as diseases whose primary symptoms are behavioural or cognitive although their causes are biological or physiological as against the physical illnesses where the cause and symptoms are purely physical. According to this view, mental disorders are seen as disorders of the central nervous system and thus are sometimes inherited or caused by some medical factors like injuries or physical diseases. Psychological or environmental factors are not considered to cause these disorders. We will discuss ‘five’ of the most important categories of biological factors that seem to be responsible for maladaptive behaviour. These are given below:

- Neurotransmitter and Hormonal imbalances in the brain,
- Genetics,
- Constitutional liabilities,
- Brain structure,
- Physical deprivation or disruption.

1 Neurotransmitter and Hormonal Imbalances in the Brain

**Neurotransmitter Imbalances**

The 100 billion neurons in the central nervous system (CNS) communicate by chemical messengers called neurotransmitters. When these neurotransmitters become imbalanced they give rise to many psychological problems. Biological approaches to treatment focus mainly on medications that rectify neurotransmitter imbalances.

Neurotransmitters (e.g., serotonin, dopamine, nor epinephrine, GABA) are released into the synaptic cleft. They regulate level of mood, anxiety, and cognitive functioning. Factors affecting neurotransmitter imbalance include:

1) Excessive production and release of the neurotransmitter substance into the synapses, causing an excess in levels of that neurotransmitter.

2) Dysfunctions in the normal processes by which neurotransmitters are deactivated after they are released into the synapse. This deactivation is done in two ways. They are either deactivated by enzymes present in the synapse or reabsorbed or sucked back into the presynaptic axon button, a process called re-uptake. Dysfunctions can occur when the enzymes in the synapse are deficient or there is slowing of the process of re-uptake.

3) Problems in the receptors in the postsynaptic neuron, which may either be abnormally sensitive or insensitive.

2 Hormonal Imbalance

Hormones are chemicals messengers secreted by the endocrine glands (e.g., pituitary). They play a role in the functioning of the nervous system and in the regulation of behaviour (e.g., during adolescence, changes in the hypothalamic-pituitary-adrenal axis are involved in the increase in cortisol, a stress-related hormone). Malfunction of this system has been said to be responsible for various forms of psychopathology. Hormonal influences are also responsible for the differences in behaviour between men and women.

3 Genetics

Genes play an important role in determining risks for both psychotic and non-psychotic disorders. For example, the lifetime risk of schizophrenia is 1%, but for the offspring of an affected person it becomes 10% and in bipolar disorder it is 20%.

For many years, twin studies served as the most direct way of determining whether or not a disorder has a genetic basis. In the classic twin study design, the similarity of monozygotic (‘identical’) twins and disygotic (‘fraternal’) twins are compared.

Because monozygotic twins share all of their genes and disygotic twins share only half their genes, greater similarity among monozygotic twins than among disygotic twins implies a genetic component.

4 Constitutional Liabilities

The term ‘constitutional’ is used to describe any characteristic that is either innate or acquired early in life often at prenatal stage and in such strength that it is functionally similar to a genetic characteristic. Physical handicaps and temperament are some of the traits included in this category.

Embryonic abnormalities or environmental conditions operating before or after birth may result in physical defects. The most common birth difficulty associated with learning disabilities and behavioural and emotional disorders is low birth weight. Prenatal conditions that can lead to premature birth and low birth weights include nutritional deficiencies, disease, and exposure to radiation, drugs, severe emotional stress or mother’s excessive use of alcohol or tobacco. Socio-economic status is also related to foetal and birth difficulties.

5 Brain Structure

Knowledge about brain structure has increased with the advances in computed tomography (CT) scanning and magnetic resonance imaging (MRI). This has lead to many notable observations. For instance, neuroimaging in some patients with schizophrenia shows dilated cerebral ventricles and reduced frontal lobe density. This evidence indicates that schizophrenia may be neurodevelopmental in origin. Exposure to adverse conditions which can affect brain development (in utero or in early life) may lead to changes in the frontal lobes that increase the risk of schizophrenia. Neuroimaging also helps us to distinguish between different types of dementia. Also, some older people experiencing severe depression for the first time might have underlying cerebro-vascular disease.

6 Physical Deprivation or Disruption

The most basic human requirements are those of food, water, oxygen, sleep and elimination of wastes. Insufficient rest, inadequate diet or working too hard when ill, can all interfere with a person’s ability to cope and might predispose him or her to a variety of problems. Experimental studies of volunteers who have gone without sleep for 72 to 98 hours show psychological problems like...