INTRODUCTION TO PSYCHOLOGY

BIOLOGICAL MODEL

Perspective/Model/Approach:
- A paradigm in psychology is a distinct way of describing, observing, understanding, and predicting any given psychological phenomena. The professionals, as well as students, in order to conceptualize and organize the available information, need a model or paradigm. Also, it is required because it is used to test hypotheses and for conducting research work in order to testify the validity of assumptions.
- Includes assumptions about what drives human behavior, how disorders develop, and treatment prescriptions

Biological /Medical Perspective:
Based on the assumption of Materialism i.e., all behavior has a physiological basis
- An understanding of biochemical processes will give an understanding of psychological and social phenomena
- Physical structures and hereditary processes determine behavior or behavior potential
- Physical/physiological interventions can alter mental processes and behavior
- Root cause of abnormalities and disorders lies in biology and requires medical intervention

Historical Background:
The historical roots of biological model are very old, dating back to at least the time of Hippocrates. There are a number of great names that contributed to this approach, of which the more important ones will be discussed.

HIPPOCRATES (460-377 B.C)
- Greek physician/philosopher
- Regarded as the “Father of Medicine”
- Talked about basis for medical problems
- Believed that rational knowledge could serve a path for understanding psychological problems.

GALEN (129-199 A.D)
- Born to Greek parents in Asia Minor
- Great physician with an empirical approach who rejected the old doctrine and relied on his observation and research.
- Correctly identified various parts of the nervous system and had an accurate grasp of how nervous system functions.
- Known for anatomical studies on animals and observations of human body functions

JULIEN OFFROY de LA METTRIE (1709-1751 AD)
- French priest turned physician
Noticed that his fever and the resulting physical condition affected his mental state as well as his physical state.

- Body is like a machine and the soul is no different from mind
- Mind was a part of the body

**CABANIS**
- French physician
- Consciousness was a function of brain and was proved by the fact that guillotine victims were not conscious after beheading

**PHILIPPE PINEL (1745-1826 AD)**
- French physician
- Believed that abnormal behavior is caused by some hereditary defects or nervous system defects

**WILHELM GRIESSINGER (1817 – 1868 AD)**
- German psychiatrist
- Believed that the best way to understand mental disorders is to assume that they are caused by brain pathology

**PAUL BROCA (1824-1880)**
- French surgeon and anthropologist
- His main contribution is with reference to the localization of function; specific areas of brains are responsible for specific functions
- Discovered speech center in brain

**EMIL KRAEPELIN (1856-1926 AD)**
- German psychiatrist
- Stressed the likely physical cause of mental illness, and gave the first classification system of mental disorders

**CHARLES DARWIN: (1809-1882 AD)**
- British scientist
- Author of the revolutionary “The Origin of Species” (1859)
- According to Darwin, variations among individuals of a species would occur by chance, but could in turn be passed on to the future generations
- Gave the concept of “Survival of the Fittest” ;only those variations which helped the individuals survive long enough to breed would sustain, and be passed on
Theories in biological model:

BIOCHEMICAL THEORY
  o Very small amounts of certain chemicals in the body can cause profound changes in behavior as proved by researches.

DIATHESIS-STRESS THEORY
  o Predisposition i.e., diathesis (including genes) and stressful environment combine together to cause abnormal behavior
  o Traits are influenced by genes and by environment

FOCUS OF STUDY:
NEUROTRANSMITTERS
The synapse of the neuron releases special chemicals called “neurotransmitters”
- Existence of neurotransmitters has been known since 1920’s; but the evidence of their relationship with psychological disorders has been found and known since 1950s
- More than 50 neurotransmitters exist in human body

NEUROTRANSMITTERS AND THEIR ROLE
- Acetylcholine: Learning, Memory and Muscle control
- Dopamine: Motor activity, Coordination, Emotion and Memory
- Epinephrine: Emotion, Stress
- GABA (Gamma-Amino Butyric Acid): Anxiety, Arousal, Learning
- Serotonin: Sensory Processing, Sleep, Arousal
- Glutamate: Anxiety, Mood

ENDOCRINE GLANDS
These glands form the body’s “slow” chemical communication system; a set of ductless glands that secrete hormones (special chemicals) into the bloodstream

ENDOCRINE GLANDS and ABNORMALITY
- Low secretions of the thyroid produce anxiety like symptoms such as irritability and tension
- Low level of pituitary secretions produces depression like symptoms—Fatigue, apathy etc.
- Abnormal secretions of hormones may cause major depression

Assumptions of Biological/Medical Model:
- Abnormality is caused by some disease in the “Central Nervous System”(C.N.S).
- Disease in the C.N.S. has some biological or physical origin.
- Physicians are best able to treat diseases of the C.N.S.
- Diseases in the C.N.S. are not currently specific.
THERAPEUTIC TECHNIQUES IN BIOLOGICAL MODEL:

**Pharmacological Treatment**
- “Pharmacology is the science of the study of drugs to treat a wide range of less severe psychological disorders”.

I. **NARCOSIS:** The word “Narcosis” is derived from the Greek word meaning, “be numb”.
   a. **Prolonged Narcosis:**
      - Person is made to sleep for 15-24 hours a day and is kept under constant observation
      - Prolonged narcosis is difficult and dangerous to administer, because a number of physiological complications develop under prolonged sleep
      - Seldom used today
   b. **Narcoanalysis:**
      - Drugs are given in amounts that produce a state of “grogginess”

II. **CHEMOTHERAPY:**
It is the type of therapy that treats mental and behavioral disorders with drugs and chemicals
   a. **Tranquilizers:**
      - Drugs that produce soothing and calming effects
   b. **Energizers:**
• They are used with the sufferers of depression who are not helped by sedatives

**Types of Drugs**
- **Stimulants**: Caffeine, nicotine, cocaine
- **Depressants**: Alcohol, barbiturates
- **Anti-anxiety drugs**: Benzodiazepines: diazepam (Valium), lorazepam (Ativan)
- **Antidepressants**: phenezine (Nardil), paroxatine (Paxil)
- **Hallucinogens**: lysergic acid (LSD), MDMA (Ecstasy)-in large doses, cannabis (marijuana)-in large doses

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**Non-pharmacological Somatic Treatment**
- In 1930’s, several therapies were developed which draw considerable attention: **Insulin-Shock Therapy**:  
  - Developed by Manfred Sakel to cure psychological disorders by administrating insulin to produce a state of comma  
  - Coma is caused because of a reduction in blood sugar level  
  **Depression of metabolic processes tissues and cells**: Found to be Effective with schizophrenics, addicts etc., if used with psychotherapy.  
  - Now rarely used as a method of treatment

I. **ELECTRO-CONVULSIVE THERAPY (ECT)**:  
- A biochemical therapy for severely depressed patients in which a brief electric current is sent through the brain of the anesthetized patient  
- This controversial therapy is applied to severely depressed patients

II. **PSYCHO-SURGERY**:  
- It involves brain surgery which is used in the treatment of severe psychotic patients who have resisted all other forms of treatments

**Merits of Biological Approach**
- Although psychological causes are significant, biological causes are worthy of examination and study too  
- Research work is rapid, producing valuable new information
Demerits of Biological Approach

- Explains human behavior in biological terms, treats with the help of biological methods, and ignores psychological factors.
- Mental life is an interplay of both biological and non-biological (environmental) factors; biological has been emphasized at the cost of ignoring the non-biological, or psychological.

Criticism Against Medical/ Biological Model:

- No independent means of verifying/ identifying the existence of the disease; both factors and symptoms are often assessed.
- There exist alleged differences between the symptoms of physical illness and the symptoms of mental illness.
- Symptoms of mental illness are subjective, whereas those of physical illnesses are objective.