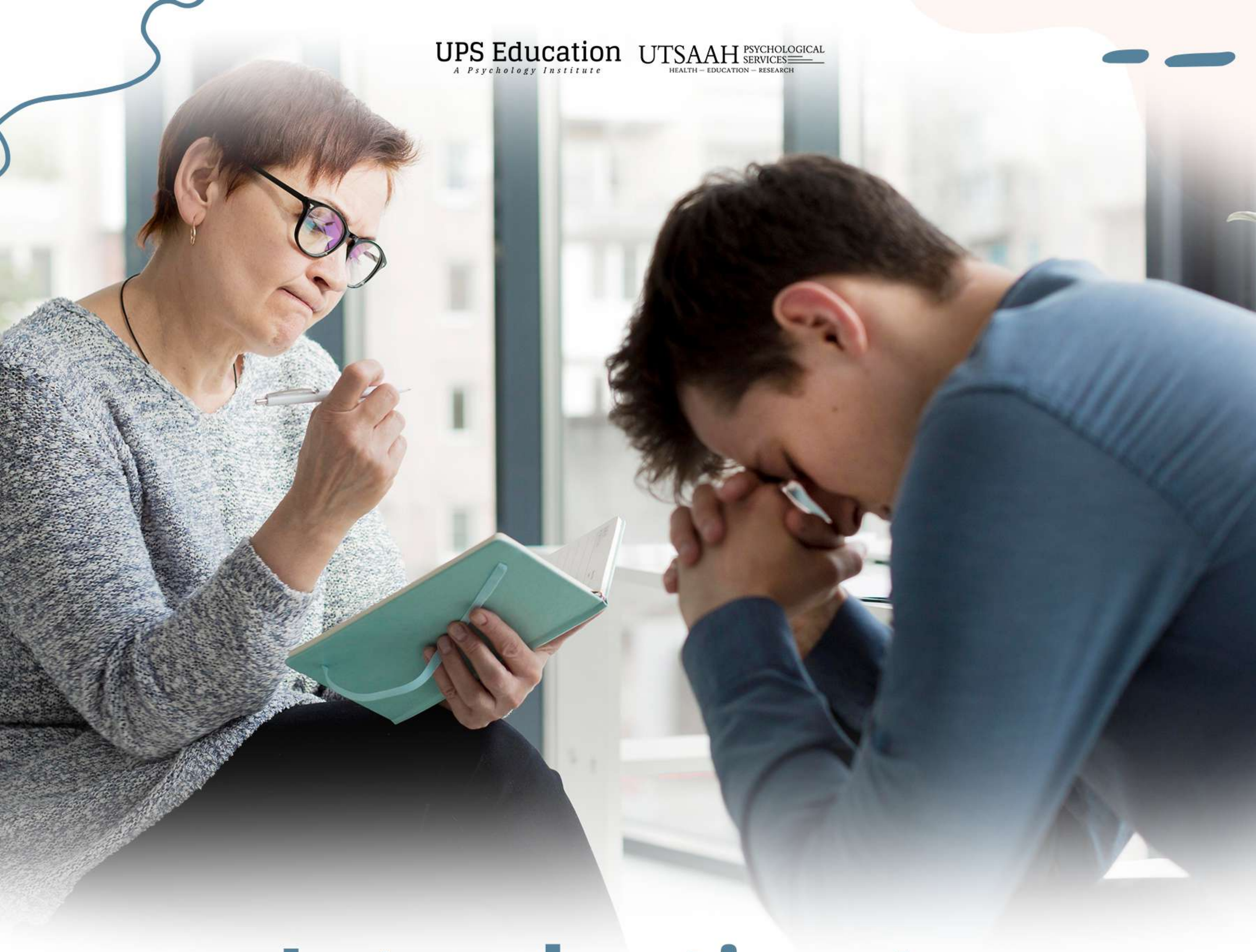
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Introduction to Biomedical Therapies

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Biomedical therapies involve the use of medications and medical interventions to treat psychological disorders. These treatments are based on the biological perspective, which sees mental health conditions as having a physiological origin. They are commonly used to manage conditions like depression, anxiety, schizophrenia, and bipolar disorder by targeting brain chemistry and neural functioning.

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Psychopharmacology

Psychopharmacology is the study of how drugs affect the brain and behavior. Medications used in mental health include antidepressants, antipsychotics, mood stabilizers, and anti-anxiety drugs. Each drug class functions by altering neurotransmitter levels in the brain. For example, antidepressants increase serotonin or norepinephrine to improve mood, while antipsychotics reduce dopamine activity to manage psychosis.

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Antidepressant Medications

Antidepressants are prescribed for mood disorders like major depression and anxiety disorders. The most common types include SSRIs (Selective Serotonin Reuptake Inhibitors), SNRIs (Serotonin-Norepinephrine Reuptake Inhibitors), and tricyclics. These medications take weeks to show effects and often require monitoring for side effects like weight gain, insomnia, or sexual dysfunction.

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Antipsychotic Medications

Used primarily for schizophrenia and bipolar disorder, antipsychotics work by reducing the activity of dopamine, a neurotransmitter linked to delusions and hallucinations. There are two types: typical antipsychotics (older, with more side effects) and atypical antipsychotics (newer, with fewer side effects). Atypical antipsychotics, like risperidone and clozapine, are preferred for long-term treatment.

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Mood Stabilizers

Mood stabilizers like lithium and anticonvulsants are used to treat bipolar disorder by balancing extreme mood swings between mania and depression. Lithium is one of the oldest and most effective mood stabilizers, though it requires regular blood tests due to potential toxicity. Other mood stabilizers, such as valproate, help regulate mood without the risks associated with lithium.

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Anti-Anxiety Medications

These medications are used to alleviate anxiety and panic disorders. Benzodiazepines, such as diazepam (Valium) and alprazolam (Xanax), work quickly to calm the nervous system but can lead to dependence if used long-term. Non-benzodiazepine options like buspirone are slower-acting but have a lower risk of addiction.

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Electroconvulsive Therapy (ECT)

ECT is used for severe depression and other mental disorders that do not respond to medication. It involves passing a mild electrical current through the brain to induce a controlled seizure. Despite its controversial history, modern ECT is safe, effective, and done under anesthesia. It is particularly effective for treatment-resistant depression and acute mania.

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Deep Brain Stimulation (DBS)

DBS is a surgical procedure where electrodes are implanted in specific brain regions to regulate abnormal activity. It is used in severe cases of depression, OCD, and Parkinson's disease when other treatments have failed. DBS allows doctors to stimulate precise brain areas without damaging surrounding tissues, making it a highly controlled treatment.

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Transcranial Magnetic Stimulation (TMS)

TMS is a non-invasive therapy where magnetic fields stimulate nerve cells in the brain. It is most commonly used for depression and OCD. Unlike ECT, TMS does not require anesthesia and has fewer side effects, making it a more appealing option for those who have not responded to medications.

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