Stress

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Stress (Psychological stress)

Stress is the disruption of homeostasis through physical or psychological stimuli.

- **Selye Definition:**

Body's physiological response to psychological and physical demands (stressors)

Stressors

- **A Stressor is a stimulus or event that provokes a stress response in an organism.**

- **Stressors can be categorized as:**

➢ **Acute**	**X**	**Chronic**
➢ **External**	**X**	**Internal**
➢ **Unpleasant**	**X**	**Pleasant**
(Distress)		***(Eustress)***
➢ **Physical**	**X**	**Emotional**
		(Psychological; Mental)

Common stressors

Both negative and positive stressors can lead to stress:

- **Sensory: pain, bright light**
- **Life events: birth and deaths, marriage, and divorce**
- **Responsibilities: lack of money, unemployment**
- **Work/study: exams, project deadlines**
- **Personal relationships: conflict, deception**
- **Lifestyle: heavy drinking, insufficient sleep**
- **Early life exposure (e.g. child abuse)**
- **Lack of control over environmental circumstances, such as food, housing, health, freedom, or mobility.**

Psychological Distress

Results from three types of experience:

1. **Pressure**
2. **Conflict**
3. **Frustration**

Special Stressful Events

- **Serious Physical Illness**
- **Terminal Illness**
- **Bereavement**

Components of the Stress Response

1. **Emotional (Fear, Anxiety and Depression) accompanied by somatic changes**

2. **Psychological to reduce the potential impact of the experience:**

- ✓ **Impaired recall and numbness**
- ✓ **Coping strategies**
- ✓ **Defense Mechanisms**

Coping Strategies

1. **Adaptive:**
   - **Avoidance**
   - **Working through problems**
   - **Coming to terms with situations**
2. **Maladaptive:**
   - **Substance abuse**
   - **Histrionic or aggressive behavior**
   - **Deliberate self-harm**
3. **Culturally determined**

Individual's Response to Stressors

Determined according to:

1. **Physiological reactivity**
2. **Cognitive appraisal**
3. **Control**

- ✓ **Type A behavior**
- ✓ **Hostility**
- ✓ **Antagonism with others**

STRESS SYMPTOMS

- **Unusual heart beat (fast, pounding, irregular, etc.)**
- **Unusual breathing (fast, shallow)**
- **Restless feeling (feels like you have to move)**
- **Muscles feel tight or tens**
- **Frequent aches and pains**
- **Headaches**
- **Often get the flu or cold**

STRESS SYMPTOMS

- Feels warm or hot when it isn't hot
- Sweat more than normal
- Dry mouth
- Nervous stomach (gas, diarrhea, constipation)
- Heartburn, Nausea,
- Loss/or increase in appetite
- Urinate more than normal
- Fatigue

STRESS SYMPTOMS

- **Obsessive worrying**
- **Lack of concentration**
- **Memory loss**
- **Feeling self-consciousness, Shy, Lonely,**
- **Uncomfort, Irritability,**
- **seriousness Dissatisfaction,**
- **Fear, Anxiety, Anger, Panic**
- **Depressed mood, Unhappiness, Crying**
- **Insomnia**
- **Sexual problems**

General adaptation syndrome (GAS)

A term used by Selye to describe the body's short-term and long-term reactions to stress.

- **GAS involved two major systems of the body:**
  - **the nervous system**
  - **the endocrine (or hormonal) system.**

- **Three distinctive stages:**
  - **Alarm reaction**
  - **Resistance**
  - **Exhaustion**

Stage 1: Alarm reaction

- **is the immediate reaction to a stressor.**

"fight or flight" response, which prepares the body for physical activity.

- **This initial response can also decrease the effectiveness of the immune system, making persons more susceptible to illness during this phase.**

Stage 2: Resistance (stage of adaptation)

- **During this phase, if the stress continues, the body adapts to the stressors.**
- **Changes at many levels take place in order to reduce the effect of the stressor.**

Example, if the stressor is starvation, the person might experience a reduced desire for physical activity to conserve energy, and the absorption of nutrients from food might be maximized.

Stage 3: Exhaustion

When stress continued for some time the body's resistance to the stress may gradually be reduced.

- **The immune system, and the body's ability to resist disease, may be almost totally eliminated.**
- **Patients may develop heart attacks or severe infection due to their reduced immunity.**

Example, a person with a stressful job may experience long-term stress that might lead to high blood pressure and an eventual heart attack.

Neurochemistry and Physiology of GAS

- **Stress activates the sympathetic division of the ANS and release of epinephrine, and cortisol.**
- **Sympathetic output produces the fight-or-flight response, causing the body to divert blood flow to large muscles.**
- **Less blood flows to the digestive system and other organs, producing dry mouth, motor agitation, sweating, pallor, enlarged pupils and, insomnia.**

Neurochemistry and Physiology of GAS

- **Stressors can cause continual sympathetic activation with very little opportunity for the parasympathetic to activate.**
- **parasympathetic activation allows the bowel and other non-muscle organs receive good blood-flow, the pupils constrict, and the glands all function well and secrete their various compounds.**
- **Absence parasympathetic activation leads to poor digestion and may lead to poor healing and organ function.**

Neurochemistry and Physiology of GAS

- **The body reacts to stress first by releasing:**
  - **catecholamine hormones (epinephrine and norepinephrine)**
  - **glucocorticoid hormones (cortisol).**
- **The hypothalamic-pituitary-adrenal axis (HPA) balances hormone releases from the adrenal medulla, and from the adrenal cortex.**

Psychoneuroimmunology (PNI)

- PNI investigates the relations between the psychophysiological and immunophysiological dimensions of Man.
- PNI also involves endocrinology and is sometimes referred as: psycho endoneuro immunology (PENI).
- **Stress can significantly affect many of the body's immune systems.**
- **Stress is thought to affect immune function through emotional and/or behavioral manifestations (such as anxiety, fear, tension anger and sadness) and physiological changes (heart rate, blood pressure. Sweating).**

Psychoneuroimmunology (PNI)

- **Stressful events trigger cognitive and affective responses which, in turn, induce sympathetic nervous system and endocrine changes, and these ultimately impair immune function.**
- **Health consequences include rates of infection, HIV progression, and cancer incidence and progression**
- **These changes are beneficial if they are of limited duration, but when stress is chronic, the system is unable to maintain equilibrium or homeostasis**

Psychoneuroimmunology (PNI)

- **Stressful events (Acute, Short-term and Long-term) in healthy adults revealed consistent stress-related immune changes:**

- **Increases in numbers of total white blood cells**
- **Decreases in the numbers of helper T cells, suppressor T cells, and cytotoxic T cells, B cells, and Natural killer cells (NK)**

- **Antidepressants seem to exert beneficial effects by decreasing Interferon-beta (IFN-beta) release or augmenting NK activity in depressed patients.**

Determinants of GAS

- **overall health and nutritional status,**
- **sex,**
- **age,**
- **ethnic or racial background,**
- **level of education,**
- **socioeconomic status (SES),**
- **genetic make up,**
- **others….**

Pathological Impact of Stress

1. **Psychiatric disorders:**
2. **Stress disorders:**
   - Acute Stress disorder
   - Post traumatic stress disorder
   - Adjustment disorder
3. **Physical disorder (Psychosomatic disorders)**

Stress reduction strategies

- **Generally fall into one of three categories:**
- **avoiding stressors**
- **changing one's reaction to the stressor**
- **relieving stress after the reaction to the stressor**
- **Many mainstream as well as complementary or alternative strategies for stress reduction:**
- **exercising**
- **listening to music,**
- **massage**

Selye Approach to Stress

(living wisely in accordance with natural laws)

- **Adopting an attitude of gratitude toward life.**
- **Acting toward others from altruistic motives.**
- **Retaining a capacity for wonder and delight in the genuinely good and beautiful things in life.**
- **Finding a purpose for one's life and expressing one's individuality in fulfilling that purpose.**
- **Keeping a healthy sense of modesty about one's goals or achievements.**

THANK YOU