Stress and Stress Management

By

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Stress and Stress Management

Definition of stress:

- Personal evaluation of external events in relation to one’s coping resources and its physiological responses in the individual.

Selye divided stress into:

a. Eustress: where stress enhances function (physical or mental).
b. Distress: persistent stress that is not resolved through coping or adaptation may lead to anxiety or withdrawal (depression) behavior.

Components of stress:

1. External components:
   a. Environmental circumstances.
   b. Changing life events.
   c. Chronic conditions (crowding, poverty).

2. Internal components:
   a. Alarm.
   b. Resistance.
   c. Exhaustion.

3. Interaction between the two components:
   a. Primary cognitive appraisal.
b. Secondary cognitive appraisal.

**Cognitive Appraisal (cerebral activity):**

The term cognition can be used to refer to the entire range of mental processes from input stimuli to output response. Cognitive Appraisal is a two-part mental process during which decisions are made about potentially stressful stimuli.

1) **Primary Appraisal:** That deals with determination of an event as either:

   a. **Eustress,** good, benign and positive uplift capable to produce optimum arousal for task performance (effort facilitation), or
   b. **Distress,** harmful or threatening hassles produce higher arousal related to distress and deterioration of performance.

2) **Secondary Appraisal:** That deals with determination of one’s coping resources as either:

   a) Sufficient: Successful coping. or
   b) Insufficient: Vulnerability.

**Coping:** refers to the effort required to manage specific demands of a particular situation.

**Vulnerability:** refers to individual’s lack of actual resources to cope with a situation (exceeding one’s ability).

**Illness:** is related to stress appraised as harm or threat with insufficient coping resources resulting in much distress than effort.

**Distress:** refers to anxiety, boredom and dissatisfaction. It is experienced as negative emotion.
Neuroanatomy of stress:

  Brain: plays a critical role in the body’s perception of and response to stress. However, exactly which regions of the brain are responsible for particular aspects of a stress response is difficult and often unclear.

The most important areas are:

  a) Hypothalamus: One of its most important functions is to help link together the body’s nervous and endocrine systems. It has many neural connections with different brain areas that regulate hormones secretions (i.e. corticotropin-releasing hormone), and effects on physiological processes such as metabolism.

  b) Amygdala: it plays a role in the processing of emotions, sex and in modulating stress response mechanisms, particularly when feelings of anxiety or fear is involved.

  c) Hippocampus: it plays an important role in memory formation, but during stress, it is important in cognitive processes (using previous memories). The hippocampus is also an area in the brain that is susceptible to damage brought upon by chronic stress.

  d) Locus ceruleus: it is the principal site of the synthesis of the neurotransmitter norepinephrine, which plays an important role in the sympathetic nervous system’s fight-or-flight response to stress.

  e) Raphe nucleus: it is the principal site of the synthesis of the neurotransmitter serotonin, which plays an important role in mood regulation, particularly when stress is associated with depression and anxiety.
Neurochemistry:

1. Corticotrophin-releasing hormone: secreted by the hypothalamus during a stress response that stimulates the anterior lobe of the pituitary gland by binding to its Corticotrophin-releasing hormone receptors causing anterior pituitary to release adrenocorticotropic hormone.

2. Adrenocorticotropic hormone: secreted by the anterior lobe of the pituitary gland into the body’s blood stream that stimulates the cortex of the adrenal gland causing it to release cortisol.

3. Cortisol: produced by the adrenal gland and secreted during a stress response. Its primary function is to redistribute energy (glucose) to regions of the body that need it most. During stress cortisol suppress the body immune system.

4. Norepinephrine: secreted by the locus cerulus. It serves as the primary chemical messenger of the central nervous system’s sympathetic that prepare the body for fight or flight response.

5. Serotonin: secreted by the raphe nucleus. It plays an important role in mood regulation.

6. Neuropeptide Y: is synthesized by the hypothalamus and acts as a chemical messenger in the brain. It plays an important role in appetite, feeding behavior and satiety. Recent findings implicate it in anxiety and stress.

Physiological responses to stress:

1. Effort with distress: which leads to increase of both catecholamines and cortisol secretions.

2. Effort without distress: which leads to an increase in catecholamine and suppression of cortisol secretion. It is a joyous state with successful coping and positive emotions.

3. Distress without effort: which leads to increase cortisol secretion and possibly catecholamine secretion. This pattern is typically found in depression. It is defined as helplessness.
Stress Mediators:

These are factors capable of increasing or decreasing (Buffers) the effects of stress. Buffers act through two mechanisms:

a. **Direct:** By decreasing physiological responses itself so maintain homeostasis by decreasing arousal after stress.
b. **Indirect:** Affect cognitive appraisal, through decreasing evaluation of threat and increasing beliefs in coping abilities.

Some of stress mediators:

1) **Type A and Type B behavior:**

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<thead>
<tr>
<th>Type A</th>
<th>Type B</th>
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<tbody>
<tr>
<td>a) Competitive.</td>
<td>a) Non competitive.</td>
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<tr>
<td>b) Goal striving without joy.</td>
<td>b) Enjoys the process as much as the goal.</td>
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<tr>
<td>c) Time urgency, impatient.</td>
<td>c) Patient.</td>
</tr>
<tr>
<td>d) Angry urgency, hostile.</td>
<td>d) Little anger and hostility.</td>
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<tr>
<td>e) Higher reactivity with rapid response to threat.</td>
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<td>f) Take more activities thus increase number of stresses.</td>
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2) **Social support:** the greater the social support the lesser will be the hazard of stress.
3) **Personal support:** having a sense of control makes it easier to deal with stress and encourages people to help themselves.

4) **Hardiness(hardy personality):** it is a personality characteristics which acts as a mediator of stress. It combines 3 characteristics:
   
a. Commitment: this develops when one approaches life with a sense of meaning and active involvement in work.
   
b. Control: this is a feeling of being able to influence events.
   
c. Challenge: this is a view of change as an opportunity for growth rather than threat.

5) **Exercise/ Activity level:** Exercise can help reduce anxiety and depression and increase well being.

6) **Humor:** it help buffering stress effect. Watching humorous videotapes increases immunoglobulin A.

7) **Spiritual support:** stress is buffered when person has strong belief that he has support from God.

**Management of stress:**

Some stress is necessary for arousal and may actually be good; other is bad and hazardous.

**Goal of stress management:** is not to eliminate stress but to learn to live compatibly with it.
A. **Arousal Management:**

i. Medications: e.g. benzodiazepines and beta blocker to attack anxiety.

ii. Relaxation training: meditation and muscle relaxation techniques.

iii. Exercise: has a stress buffering role.

B. **Transaction Management:**

i. Problem focused: if the problem is changeable.

ii. Emotion focused: if the stressful stimulus cannot be dealt with easily or the situation is perceived as unchangeable. There are two types of cognitive intervention:
   a) Distracting oneself from the stressful situation: as reading or recreation.
   b) Changing cognitive appraisal: altering the perception of stress or learning to tolerate or accept.