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## **FACTORS AFFECTING OXYGENATION**

- Physiologic factors
- Developmental factors
- Lifestyle factors
- Environmental factors
- Age
- Disease process

### **Physiologic factors:**

- ❖ There are large numbers of physical disease or activities that effect the respiratory functioning.
- ❖ The main cardiac disorders include disturbances in conduction, myocardial hypoxia, respiratory disorders like hyperventilation, hypoxia, hypoventilation
- ❖ The other condition such as anemia , increased metabolic demands like pregnancy or fever and infection may also influence the process of oxygenation
- **Decreased oxygen carrying capacity**
- **Decreased inspired oxygen concentration**
- **hypovolemic**
- **Increased metabolic rate**

### **Decreased oxygen carrying capacity:**

- ❖ Hemoglobin is mainly responsible for carrying oxygen to tissues
- ❖ When the person is suffering from anemia i.e. having hb level then the oxygen carrying capacity gets decreased

### **Decreased inspired oxygen concentration**

When there is an obstruction in the upper or lower airway tract and the environment is such where oxygen level is less, leads to decrease in the amount of oxygen and hence decrease in the oxygen carrying capacity

### **Hypovolemic:**

- ❖ In case of severe vomiting, profuse sweating in case of any disease condition leads to extracellular fluid loss and results in decreased circulating blood volume
- ❖ For this, the body tries to adapt by increasing heart rate in order to increase blood volume returned to the heart.

### **Increased metabolic rate**

- ❖ When one is performing any kind of exercise, women are having pregnancy and in case of wound healing process, fever etc.
- ❖ They need a higher amount of oxygen to meet the metabolic requirements of the client
- ❖ There is an increased rate and depth of respiration, use of accessory muscle of respiration, pursed-lip breathing and decreased activity tolerance

**Age:** older adults may exhibit a barrel chest and require increased effort to expand the lungs. Older adults are also more susceptible to respiratory infections because of decreased activity of cilia which normally are effective defense mechanism.

### **Environmental and lifestyle factors**

- ❖ Environmental and lifestyle factors can significantly affect clients' oxygenation status.
- ❖ Clients who are exposed to dust, animal dander, chemicals in the home or workplace are at increased risk for alteration in oxygen
- ❖ Individuals who experience significant physical or emotional stress or who are obese or underweight are also subject to changes in oxygenation status.
- ❖ Smokers and second hand smokers are also affected

### **Disease process**

- ❖ Oxygenation alterations can often be traced to alteration in alveolar gas exchange, oxygen uptake or circulation.
- ❖ Diseases that may affect oxygenation include: obstructive pulmonary disease, atherosclerosis heart failure, anemia

### **Condition /factors affecting chest wall movement**

- **Pregnancy**
- **Obesity**
- **Musculoskeletal abnormalities**
- **Trauma**

**Pregnancy:** as the fetus is growing that pushes the diaphragm upward hence decreases the area of thoracic cavity and leads to decline in inspiratory capacity, dyspnea on exertion and increased fatigue

**Obesity:** in case of obesity, client's lung volume is reduced from the heavy lower thorax and abdomen, especially in recumbent and supine position

There occurs obstructive sleep apnea characterizes by loud snoring

The obese persons are also susceptible to pneumonia because the lungs cannot fully expand and pulmonary secretion is not mobilized in the lower lobes.

**Musculoskeletal abnormalities:** condition such as kyphosis, scoliosis, and any structural abnormality in the thoracic cavity leads to insufficient inhalation of oxygen i.e. required to maintain the body system.

**Trauma:** a person suffering from multiple hip fracture any lesion in the in the chest wall, any incision in the cavity or chest wall cause impairment in the process of oxygenation.

