## **Tishik International University Nursing Department Fundamental of Nursing** Vital signs- Respiration **Assist prof: Halmat Authman Rasheed**

- **Respiration** is the act of breathing.
- **Inhalation or inspiration** refers to the intake of air into the lungs.
- Exhalation or expiration refers to breathing out or the movement of gases from the lungs to the atmosphere
- Ventilation is also used to refer to the movement of air in and out of the lungs.

- There are basically two types of breathing: costal (thoracic) breathing and diaphragmatic (abdominal) breathing.
- **Costal breathing** involves the external intercostal muscles and other accessory muscles, such as the **sternocleidomastoid** muscles.
- it can be observed by the movement of the chest upward and outward.





- diaphragmatic breathing involves the contraction and relaxation of the diaphragm.
- it is observed by the movement of the abdomen,
- occurs as a result of the diaphragm's contraction and downward movement.



## Mechanics and Regulation of Breathing

- **During inhalation**, the following processes normally occur.
- The diaphragm contracts (flattens), the ribs move upward and outward.
- the sternum moves outward, thus enlarging the thorax and permitting the lungs to expand.



- **During exhalation** the diaphragm relaxes, the ribs move downward and inward.
- the sternum moves inward, thus decreasing the size of the thorax as the lungs are compressed.
- Normal breathing is automatic and effortless.
- A normal adult inspiration lasts 1 to 1.5 seconds, and an expiration lasts 2 to 3 seconds.



- Respiration is controlled by **respiratory centers** in the medulla oblongata and the pons of the brain.
- These centers and receptors respond to changes in the concentrations of oxygen (O2), carbon dioxide (CO2), and hydrogen (H+) in the arterial blood.



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## **Assessing Respirations**

- Resting respirations should be assessed when the client is relaxed because exercise affects respirations, increasing their rate and depth.
- Anxiety is likely to affect respiratory rate and depth as well.
- Respirations may also need to be assessed after exercise to identify the client's tolerance to activity.

- The rate, depth, rhythm, quality, and effectiveness of respirations should be assessed.
- The respiratory rate is normally described in **breaths per minute**.
- Breathing that is normal in rate and depth is called eupnea.

- Abnormally slow respirations are referred to as bradypnea.
- and abnormally fast respirations are called tachypnea
  or polypnea .
- Apnea is the absence of breathing.

## **Factors Affecting Respirations**

- Several factors influence respiratory rate. Those that increase the rate include exercise (increases metabolism), stress (readies the body for
- "fight or flight"), increased environmental
  temperature, and lowered oxygen concentration

- Factors that may decrease the respiratory rate include decreased environmental temperature, certain medications (e.g., narcotics), and increased intracranial pressure.
- **Respiratory depth** is generally described as normal, deep, or shallow.

- **Deep respirations** are those in which a large volume of air is inhaled and exhaled, inflating most of the lungs.
- Shallow respirations involve the exchange of a small volume of air and often the minimal use of lung tissue
- During a normal inspiration and expiration, an adult takes in about 500 mL of air. This volume is called the tidal volume

• **Body position** also affects the amount of air that can be inhaled. People in a supine position experience two physiological processes that suppress respiration: an increase in the volume of blood inside the thoracic cavity and compression of the chest. Consequently, clients lying on their back have poorer lung aeration.

- Hyperventilation refers to very deep, rapid respirations; hypoventilation refers to very shallow respirations.
- **Respiratory rhythm** refers to the regularity of the expirations and the inspirations.
- **Respiratory rhythm** can be described as regular or irregular. An infant's respiratory rhythm may be less regular than an adult's