Problems of Nutrition
2023

Providing education on a well-balanced diet with nutritional supplementation & support is an important nursing responsibility.
Nutritional status influenced by

- Age/Gender
- Health
- Religion/Culture Preferences
- Attitudes about food
- Financial Status
- Availability of food sources

Hunger – uneasy or painful sensation caused by lack of food
Hidden Hunger – subclinical deficiencies but no obvious signs of undernutrition
Food Insecurity – lack of access to food to meet dietary needs.

Malnutrition is a nutritional disorder caused by:

- Insufficient diet
- Unbalanced diet
- Excessive diet
- Impaired absorption of nutrients
- Impaired assimilation of nutrients
- Upper GI disorders

Malnutrition:

- Weakens the immune system
- Impairs mental and physical health
- Slows thinking – brain atrophies
- Decreases energy
- Stunts growth/ delayed wound healing
- Hinders fetal development
- Vision problems
- Leads to infectious disease

Malnutrition – deficiency or excess of nutrients

Under nutrition: state of poor nutrition from an inadequate diet or diseases that affect appetite utilization of food
Over nutrition: ingestion of more food than required for body needs

Protein Calorie Malnutrition - *most common form of malnutrition*

- results from prolonged or chronic inadequate protein +/or calorie intake
- results from high metabolic protein & energy requirements (*i.e. illness, wound healing, cancer*)

Primary Protein-Calorie Malnutrition

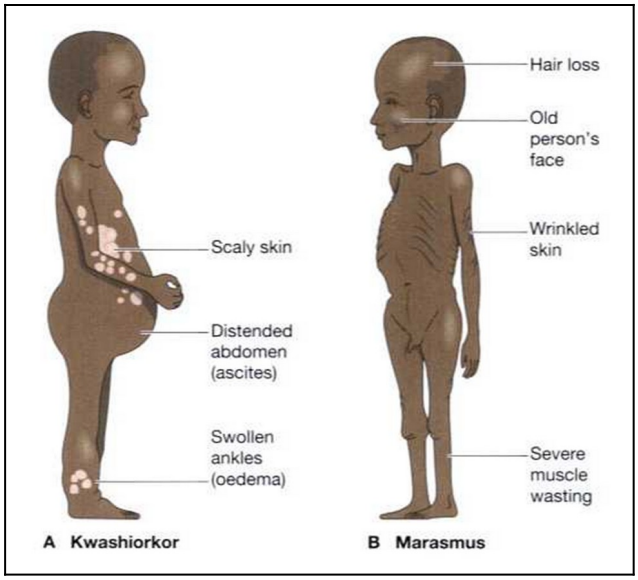
- Nutritional needs are not met – not disease related. Chronic starvation without inflammation.

Secondary Protein-Calorie Malnutrition

- Physiological problem causing inability to meet nutritional needs.
- Alteration or defect in GI processes.

Catabolism - without needed proteins & calories, body fills its energy needs by breaking down stored proteins & fats

- loss of muscle mass
- weakness and fatigue
- poor wound healing
- death



Kwashiorkor - lack of protein quality & quantity in presence of adequate calories. Low protein.
Marasmus – Calorie malnutrition in which body fat and proteins are wasted. Low protein AND low calories

<u>Starvation</u>
Initially, body uses carbohydrates to meet metabolic needs

- **Glycogen** - Found in liver and muscles. **Totally depleted within 18 hours**

Next, **skeletal proteins** are converted to glucose - **Gluconeogenesis**

Within **5-9 days, body fat is mobilized** to supply energy,

- 97% calories are provided by fat
- **Fat stores** are exhausted in **4 – 6 weeks.**

*Once fat stores gone, **visceral proteins** (internal organs) become only source of energy*

- As protein depletion continues**, liver function becomes impaired**
- Synthesis of protein diminishes
- Plasma oncotic pressure ↓
- Shift in body fluids occurs from **vascular space to interstitial compartment**
- *<u>Edema becomes clinically observable</u>*
- *<u>Skin becomes dry and wrinkled</u>*
- Sodium/Potassium Pump Fail - sodium stays in cell causing cell to expand and die
- Liver loses most mass
- Death rapidly ensues

Clinical Signs

Obvious clinical signs of protein/calories deficiencies:

- Clinical signs of malnutrition range from mild to emaciation and death
- Most obvious = *apparent in skin, mouth, muscles, and CNS*
- Decreased wound healing
- Infections
- Anemia

Nutritional Assessment

Hospitalization may cause or exacerbate malnutrition
Prevention of malnutrition is important - Identify patients at risk
Discharge teaching very important - takes many months to restore nutritional balance and prevents recurrence

Subjective data:	**Objective data:**
Dietary intake for last 24 hours	Physical Exam
Profile for at least 2 weeks	Height & weight
Identify psychosocial factors	Body frame size
Alcohol intake	Mid-arm circumference
Medications	Skin-fold thickness

Lab Value Assessments:

- Serum vitamins: screen for deficiencies
- Nitrogen balance: difference between nitrogen intake & output
- hemoglobin & hematocrit - decreased with malnutrition
- Total lymphocyte count – decreased with malnutrition
- Serum iron
- Total protein
- Albumin: visceral protein depletion
- Prealbumin - ***most specific indicator of malnutrition***

Nursing Diagnoses:

- Imbalanced nutrition: less than body requirements
- Feeding self-care deficit
- Fatigue
- Activity Intolerance
- Risk for infection
- Risk for Impaired skin integrity

Expected outcomes:

- Achieve weight gain
- Consumes specified number of calories/day
- Selects good food choices
- Eats __ % of food on tray
- Takes rest periods of 30 mins
- No evidence of infection

Goal of Treatment:
To restore nutrition with diet high in calories & proteins and prevent fatigue and infection in patient.

Nursing Interventions:

- Small frequent meals
- Supplemental feedings
- Vitamin supplements

- Foods from home
- Good mouth care
- Pain relief
- Rest periods
- Pleasant environment
- Socialization at mealtimes
- Observe for infection & wound healing

If malnutrition is severe, correct fluid & electrolyte imbalance, treat infections, consider enteral feedings Or TPN.

Nurses must be aware that hospitalization may cause or exacerbate malnutrition…how?

- Keeping patients NPO longer than necessary
- Not changing diets when progress
- Tests postponed or rescheduled…can patient eat.
- Not knowing proper prep for test
- Not monitoring patient intake/food preferences/swallowing
- Prevention is important --Identify patients at risk
- Review Medications

Discharge teaching very important --Important for nurses to know what diets are available:

- Regular
- Mechanically Altered – chopped, ground, puree
- Liquids – thin, nectar, honey, pudding
- Disease State Modifications:
- Regular
- Cardiac
- Balanced Carbohydrates
- Renal
- Low Fiber
- Full Liquid
- Clear Liquid
- Bariatric Liquid

Bariatric Medicine

Branch of medicine that deals with prevention, control, and treatment of obesity.

- Not just gastric bypass surgery but all aspects of obesity

Obesity:

1. excess fat or adipose tissues relative to lean body mass
2. 20% above normal body weight
3. Complex etiology with multiple factors

R-
E-
S-
P-

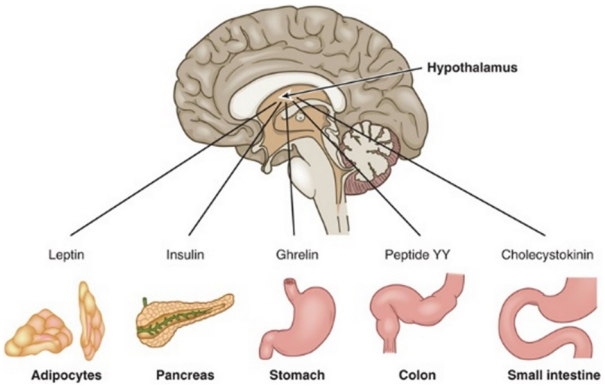
E-
C-
T-

Pathophysiology of obesity: Calorie intake exceeds energy demands for a prolonged period of time.
Body stores excess calories as fat

Primary obesity caused by excess calorie intake for metabolic demands

Secondary obesity - Congenital, chromosomal, or metabolic problems

The hypothalamus is a major site for regulating appetite. Neuropeptide Y, produced in the hypothalamus, is a powerful appetite stimulant. When it is imbalanced, it leads to overeating and obesity.

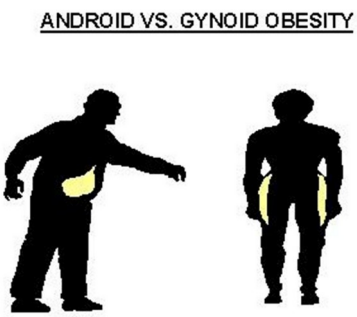


Physiologic Regulatory Mechanisms:

Leptin—↓appetite
↑fat metabolism

Ghrelin—Works on the reward system that triggers overeating
Regulates appetite through inhibition of Leptin
↑ In fasting state

- Hypertrophic Obesity: ↑in size of adipocytes. **Seen in adult onset obesity**
- Hyperplastic Obesity: ↑in number of adipocytes. **Seen in younger age**



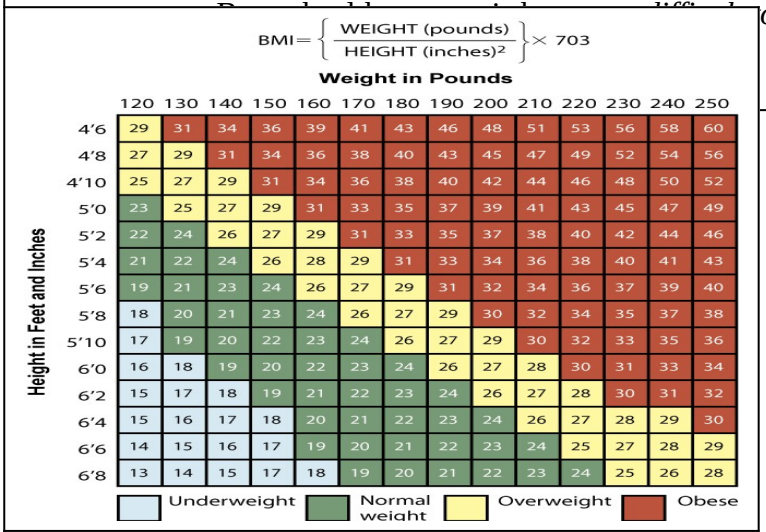
•Android Obesity – fat distributed over abdomen and upper body - **Apple body shape**
- Greater risk for obesity related complications / *cardiovascular problems*

•Gynecoid Obesity – fat distributed over the hips - **Pear body shape**

o lose

Classification of Obesity based on BMI

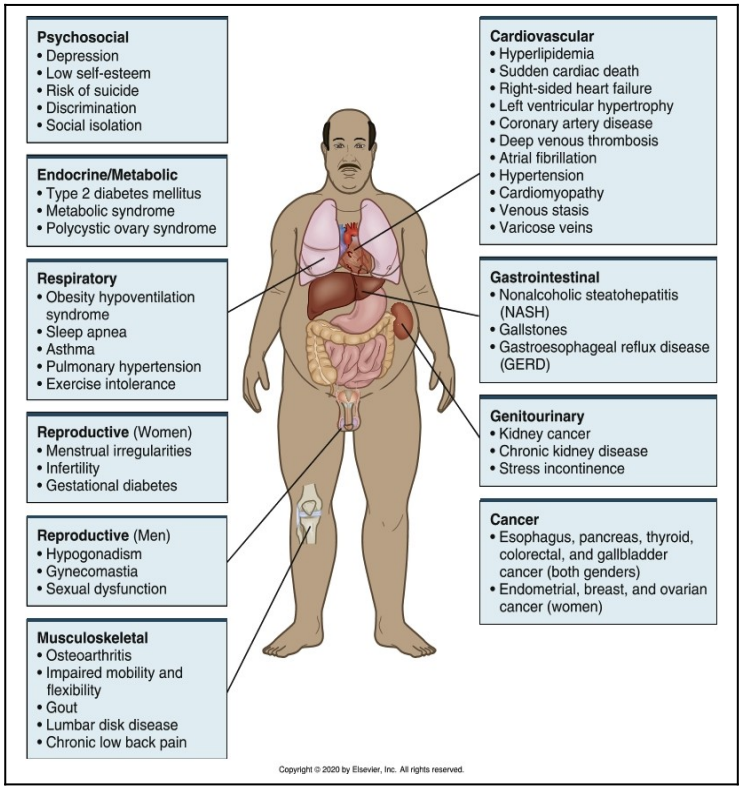
Underweight	BMI=<18.5
Normal	BMI = 18.5 – 24.9
Overweight	BMI = 25 – 29.9



Obese	BMI = > 30
Severely Obese	BMI = >40

Complications of Obesity:

- primarily cardiovascular & respiratory, musculoskeletal, susceptible to infections



Nursing Considerations of Morbidly Obese:

- How to perform palpation or physical exams
- How to position patient for examinations
- Repositioning & transferring-requires more staf
- How to get venous access (start IVs)
- Risk of aspiration increased
- Catheter placement
- Increased surgical wound infections
- Higher sepsis rates
- Impossible to give correct IM medications – can't reach muscle through SC fat
- Cat Scanners and MRI have weight limits of 300 – 350 pounds
- Obese patient's airway management creates challenges – trachea collapses from weight of tissue
- Oxygen desaturation happens quicker in obese patients
- Medications – variation in distribution, renal clearance, hepatic metabolism, protein binding

Assessment of Obesity:

Subjective:

Economic status
Physical activity
Family History
Psychological issues
Attitude towards food
Previous attempts at wt loss
Usual food intake
Effects of obesity on lifestyle/sexuality
Medications
Chronic disease
Eating behaviors
Cultural background
Usual food intake
Appetite

Objective:

Accurate height and weight
Waist circumference
Calculate BMI
Skin assessment

Nursing Diagnoses for Obesity:

- Imbalanced Nutrition: more than body requirements
- Ineffective breathing patterns
- Impaired skin integrity
- Delayed wound healing
- Impaired Mobility
- Decreased activity tolerance

Expected Outcomes:
Realistic and attainable
Specific and measurable
Short- and long-term goals
Use rewards other than food
Modify eating patterns
Increase/participate in physical exercise
Maintain weight loss at specific level

Planning:
Modify eating patterns
Participate in regular exercise
Achieve weight loss at specified level
Maintain weight loss
Minimize or prevent health problems

Treatment**:**
Prevention is best treatment for obesity!
Educate women and children.
Teach proper diet & eating habits
Weight reduction must be done gradually for long term maintenance

Non-surgical Management:
Exercise
Nutrition Therapy
Drug Therapy
Behavioral Management
Complementary & Alternative Therapies

Diet:
Restricted food intake cornerstone of weight loss program
Dietary intake must be below energy requirements to lose weight
Foods from basic food groups
Portion sizes
Fad diets are NOT successful over time
Healthy goal is 1 – 2-pound loss a week

Diet Programs:
Short term fasting – not successful
Very Low Calorie – can't stick to
Nutritionally Balanced – best
Unbalanced Low Energy - Atkins

Drug Therapy - Used in conjunction with diet and exercise (pg. 884 Table 40-9 in Lewis)

Two categories approved by FDA

- Appetite suppressant
- Decrease nutrient absorption – watch for vitamin deficiencies, esp. fat-soluble vitamins

Unapproved by FDA

- Increase metabolism (speed & uppers)
- Herbal or "natural" stimulants

Surgical Management

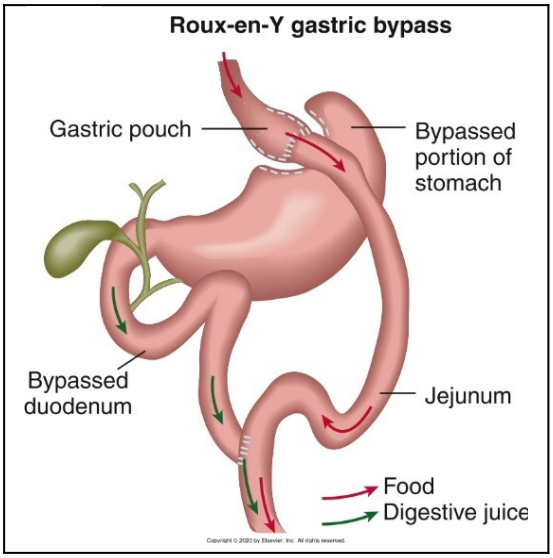
- **Cosmetic**
  - Liposuction
  - Once weight loss has stabilized
- **Restrictive** – decreases capacity or volume of stomach

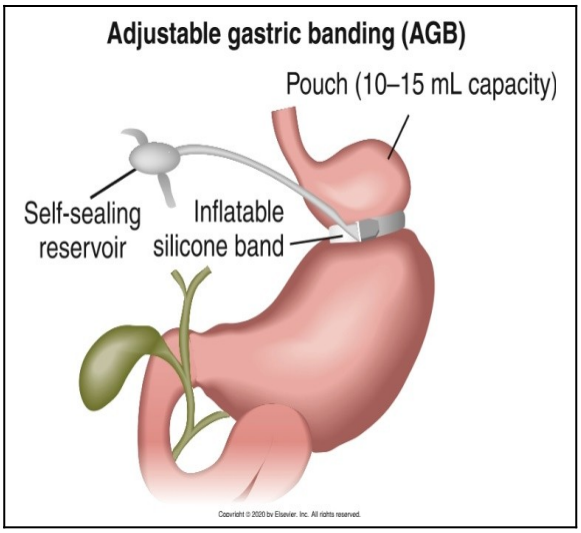
- Gastroplasty (gastric partitioning) - stomach is divided by surgery, stapling, or banding into small upper portion & large distal portion. “Gastric Lap Band, Gastric Sleeve”
- Must modify dietary habits
- **Gastric Band**- Adjustable lap band gastroplasty- AGB- adjustable gastric banding
- Stomach opening can be tightened or loosened over time to change the size of the passage
- **Gastric Sleeve**- Permanently removes portion of stomach, left is slim tube or “sleeve
- Restricts intake, reduces hunger without re-routing anything

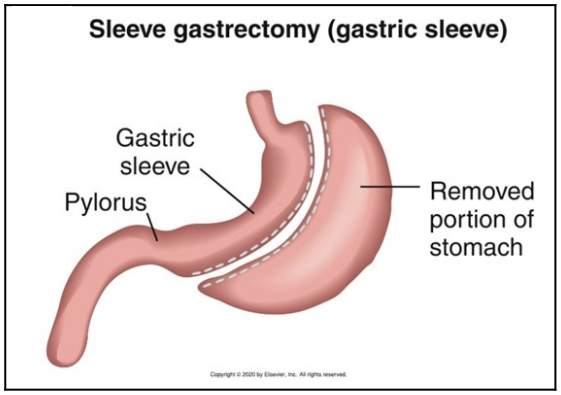
- **Malabsorptive surgery**-interferes with absorption of nutrients
  - Biliopancreatic diversion - “Duodenal switch”
- **Combination:**
  - Gastric bypass, “Roux-en-y – gastrojejunostomy”
  - Creates small gastric pouch and attaches to small intestine

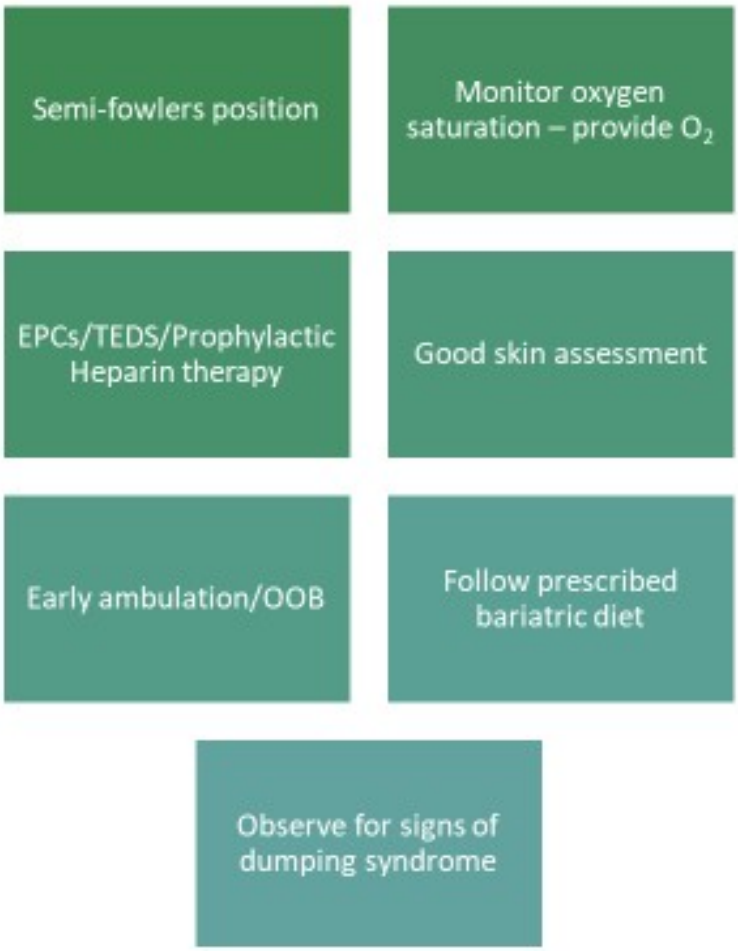
Bariatric Liquid Diet:
Juice (v8, Toamto), chicken /vegetable broth, decaf coffee, decaf tea, crystal light, mio, unsweetened iced tea
*No carbonated beverages, caffeine, straws, meds taken 1 at a time 15 mins a part, no jell-o

<u>Post-operative Care:</u>
All risks of major abd surgery
Airway priority
Pain management
Safety
Complications: anastomotic leak most common









Teaching/Pre & post op care:

•Very important as patients are high risk
•Dietary habits must be modified
•Need counseling to help cope with emotional issues
•Increase activity
•Community Resources