(M.Sc., F& N II Y : Clinical Nutrition and Dietetics)

Practical Manual II - Dietetics & Diet Therapy

DIETETICS AND DIET THERAPY

1

PRACTICAL MANUAL- II

M.Sc., FOODS AND NUTRITIONAL SCIENCES (Second Year) SPECIALIZATION - I: CLINICAL NUTRITION AND DIETETICS

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CENTRE FOR DISTANCE EDUCATION ACHARYA NAGARJUNA UNIVERSITY

M.Sc. (Foods & Nutritional Science), SECOND YEAR SPECIALIZATION - I: CLINICAL NUTRITION AND DIETETICS PRACTICAL - II: DIETETICS AND DIET THERAPY

SYLLABUS

- 1. Food Exchange list
- 2. Standardization of recipes serving size and cost per person
- 3. Planning of diets using desirable dietary pattern.
- 4. Preparation of diets
 - Clear fluid and full fluid
 - Mechanical soft diet & dental soft diets
 - High fiber diets
 - Low residue diets
 - High protein diets
 - Low protein diets
 - Low fat
 - Low sodium
 - Sodium restricted
 - Calcium restricted
 - Visit general and specialized hospitals to observe and take studies of following patients
 - 1. CVD : Hypertension Atherosclerosis ,Myocardial infraction, Conjunctive cardiac failure
 - 2. Renal disorders:- Nephrotic syndrome , Nephritis (Acute and chronic), Renal calculi
 - 3. Cancer
 - 4. Diabetes Mellitus: Diet planning and calculations of Nutritive value.
 - 5. Febrile condition:- Typhoid, Malaria, tuberculosis

CLEAR LIQUID DIET | LIQUID DIET

OBJECTIVE:

To know the important considerations of clear liquid diets

INTRODUCTION:

A clear liquid diet is used in certain medical situations, and should be followed when recommended by a physician / Dietitian. The diet helps to keep hydrated (body fluids, salts and minerals) and helps to get the body used to food after long periods of time without food. The clear liquid diet is easy to digest and does not leave much residue in the stomach and intestines.



Important Considerations of a Clear Liquid Diet:

The clear liquid diet is a temporary diet that is used in several different settings:

- If an experience abdominal discomfort such as cramps or pain, contact to doctor or nurse as soon as possible.
- The clear liquid diet does not provide enough energy, protein and many other nutrients for daily use. This diet is temporary and should not be used for more than 5 days.
- The amount of liquid that drink or eat on this diet may be important.
- Liquids that can see through at room temperature (about 78-72 degrees Fahrenheit) are considered clear liquids. This includes clear juices, broths, hard candy, ices and gelatin.

Details about the Patient:

- 1. Patient / Person General Information:
- 2. Anthropometric Measurements:

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- 3. Past Medical Condition:
- 4. Present Medical Condition:
- 5. Food Habits:
- 6. Principles of the Diet:

Name of the Diet: _____ Category: _____

TABLE 1: DIET PLAN FOR CLEAR LIQUID DIET

SUGGESTED MEAL OUTLINE	Ingredients	Weight/volume of each ingredient	Preparation instructions (directions)

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Number of Serving sizes:	
Method of Preparation:	

TABLE 2: CALCULATIONS FOR DIETARY NUTRIENTS

Ingredients	Weight/		Macro nutrients			Micro nutrients			
	volume of	сно	Protein	Fat	Fiber	Vit	Vit	Vit-	Folic
	ingredient					Α	-В	с	acid
	Total:								

SELF ASSESSMENT QUESTIONS:

- 1. Define "Clear liquid diets"?
- 2. State the advantages and disadvantages of clear fluids?

- 1. US Department of Agriculture National Nutrient Database for Standard Reference, Release 15 Nutrient List.
- 2. US Food and Drug Administration. Kurtzweil P. Daily Values' Encourage Healthy Diet.
- 3. Dorner B, Niedert KC, Welch PK. Liberalized diets for older adults in long-term care Position of ADA. *J Am Diet Assoc.* 2002;102:1316-1323.

MECHANICAL SOFT AND DENTAL SOFT DIETS

6

OBJECTIVE:

The goal of the mechanical soft diet is to provide a balanced diet with adequate amounts of protein and calories for people who have trouble chewing.

GENERAL GUIDELINES

Ease of chewing may be increased by mashing, chopping, or blenderizing.

The following guidelines will help to prepare foods with a blender:

1. Scrub all equipment with hot soapy water and rinse well.

2. To prepare food for cooking, remove skin, pits, or seeds. Remove bone, gristle, and fat from meat. Bring to a full boil and cook until tender. Vegetables do not need to be overcooked to blend well.

3. Add 1 cupful of food at a time to the blender with 1/4 cup liquid.

* More liquid may be needed for meat to allow blades to operate: care should be taken, however, to use as little water as possible so product is not too diluted.

*Possible blending liquids include:

- Juices from canned vegetables and fruits.
- Water used to boil vegetables, rice, or spaghetti for a fuller taste.
- Pan gravy.
- Water-flavored adding parsley, carrots, celery, and a mixture of herbs when boiling meats or potatoes.
- Sour cream, cream, and clear soups, ice cream, tomato and vegetable juice, water with an added bouillon cube, and whipped cream.
- 4. Force food through a strainer to remove large particles that could clog syringe.
- 5. Save time! Prepare several days' feedings at once and freeze.

Details about the Patient:

- 1. Patient / Person General Information:
- 2. Anthropometric Measurements:

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- 3. Past Medical Condition:
- 4. Present Medical Condition:
- 5. Food Habits:
- 6. Principles of the Diet:

Name of the Diet	Category:	
Name of the Diet.	Calegory	

TABLE 1: DIET PLAN FOR MECHANICAL SOFT DIET

SUGGESTED MEAL OUTLINE	Ingredients	Weight/volume of each ingredient	Preparation instructions (directions)

 Centre for Distance Education — — — 8 — — — Acharya Nagarjuna University — — —
Number of Serving sizes:
Method of Preparation:

TABLE 2: CALCULATIONS FOR DIETARY NUTRIENTS

Ingredients	Weight/		Macro nu	trients	6		Micro	nutrie	ents
	volume of	сно	Protein	Fat	Fiber	Vit	Vit	Vit-	Folic
	ingredient					Α	-В	с	acid
	Total:								

SELF ASSESSMENT QUESTIONS:

- 1. What is a soft diet?
- 2. What are the foods should be avoided in mechanical soft diets?

- 1. Lutz CA, Pryztulski KR. Nutrient delivery. In: *Nutrition and Diet Therapy: Evidence-based Applications.* 4th ed. Philadelphia, PA: FA Davis Company; 2006.
- 2. Nutrition care manual. American Dietetic Association website. Available at: http:// nutritioncaremanual.org/auth.cfm?p=%2Findex.cfm%3F . Accessed January 3, 2009.

LOW-RESIDUE / LOW-FIBER DIET

9

OBJECTIVE:

- To know the classification of fiber
- To learn about the advantages and disadvantages of dietary fiber

INTRODUCTION:

A low-residue/low-fiber diet is for people who need to rest their intestinal tract.

Chemotherapy treatments, radiation treatments, and surgery can cause trouble with digestion, especially for foods that are high in fiber. A low-residue/low-fiber diet limits the amount of food waste that has to move through the large intestine. This diet may help control diarrhea and abdominal cramping and make eating more enjoyable.

Points to Keep in Mind

- Avoid any food made with seeds, nuts, or raw or dried fruit.
- Avoid whole-grain breads and cereals. Purchase products made from refined flour.
- Do not eat raw fruits or vegetables. Remove skins before cooking.
- Limit milk and milk products to 2 cups a day. Use lactose-reduced milk or lactase enzymes if you are lactose intolerant.
- Limit fats since these can increase stool bulk.
- Avoid tough, fibrous meats with gristle.

Details about the Patient History:

- 1. Patient / Person General Information:
- 2. Anthropometric Measurements:



- 4. Present Medical Condition:
- 5. Food Habits:
- 6. Principles of the Diet:

Name of the Diet: _____ Category: _____

TABLE 1: DIET PLAN FOR LOW FIBER DIET

SUGGESTED MEAL OUTLINE	Ingredients	Weight/volume of each ingredient	Preparation instructions (directions)

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	Number of Serving sizes:	

Method of Preparation: _____

TABLE 2: CALCULATIONS FOR DIETARY NUTRIENTS

Ingredients	Weight/		Macro nutrients			Micro nutrients			
	volume of	сно	Protein	Fat	Fiber	Vit	Vit	Vit-	Folic
	ingredient					Α	-В	с	acid
	Total:								

SELF ASSESSMENT QUESTIONS:

- 1. What is a fiber?
- 2. What are the foods should be avoided in constipation?
- 3. What are the benefits of dietary fiber?

- 1. Low fiber diet. University of Virginia Health System website. Available at: http:// www.healthsystem.virginia.edu/internet/digestive-health/nutrition/low%5Ffiber%5Fdiet.pdf . Accessed May 6, 2007.
- 2. Low residue/low fiber diet. University of Pittsburgh Medical Center website. Available at: http://patienteducation.upmc.com/Pdf/LowResLowFiber.pdf . Accessed May 6, 2007.
- 3. Nutrition care manual. American Dietetic Association website. Available at: http://www.nutritioncaremanual.org . Accessed January 3, 2010.
- 4. What is a low fiber, low residue diet? Greenwich Hospital website. Available at: http:// www.greenhosp.org/pe%5Fpdf/diet%5Flowfiber.pdf . Accessed May 6, 2007.

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HIGH FIBER DIETS

OBJECTIVE:

To learn about the health benefits of high fiber foods

INTRODUCTION:

A high-fiber diet is often recommended to prevent and/or treat constipation, hemorrhoids, diverticulitis, irritable bowel syndrome, and colon cancer.

Eating a high-fiber diet can also help to improve cholesterol levels, lower risk of <u>coronary</u> <u>heart disease</u>, reduce risk of <u>type 2 diabetes</u>, and lower body weight. For people with type 1 or 2 diabetes, a high-fiber diet can also help stabilize blood sugar levels.

TIPS FOR INCREASING FIBER INTAKE

- Whenever possible, choose whole grains over refined grains (eg, brown rice instead of white rice, whole-wheat bread instead of white bread).
- Include a variety of grains in the diet, such as wheat, rye, barley, oats, quinoa, and bulgur.
- Suggest more vegetarian-based meals. Here are some ideas: black bean burgers, eggplant lasagna, and veggie tofu stir-fry.
- Choose high-fiber snacks, such as fruits, popcorn, whole-grain crackers, and nuts.
- Make whole-grain cereal or whole-grain toast part of daily breakfast regime.
- When eating out, whether ordering a sandwich or dinner, ask to extra vegetables.
- When baking, replace part of the white flour with whole-wheat flour. Whole-wheat flour is particularly easy to incorporate into a recipe.

Details about the Patient History:

- 1. Patient / Person General Information:
- 2. Anthropometric Measurements:
- 3. Past Medical Condition:

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- 4. Present Medical Condition:
- 5. Food Habits:
- 6. Principles of the Diet:

Name of the Diet: _____ Category: _____

TABLE 1: DIET PLAN FOR HIGH FIBER

SUGGESTED MEAL OUTLINE	Ingredients	Weight/volume of each ingredient	Preparation instructions (directions)

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Number of Serving sizes:
Method of Preparation:

TABLE 2: CALCULATIONS FOR DIETARY NUTRIENTS

Ingredients	Weight/		Macro nutrients				Micro	nutrie	ents
	volume of	сно	Protein	Fat	Fiber	Vit	Vit	Vit-	Folic
	ingredient					Α	-В	с	acid
	Total:								

SELF ASSESSMENT QUESTIONS:

- 1. What is the difference between soluble and insoluble fiber?
- 2. What Makes Whole Grains So Great?

- 1. Farley, Dixie. May 1993. Look for 'LEGIT' Health Claims on Foods. FDA Consumer.
- 2. Kurtzweil, Paula. May 1993. Nutrition Facts to Help Consumers Eat Smart. FDA Consumer.
- 3. Duyff, Roberta. American Dietetic Association's 2nd Edition Complete Food and Nutrition Guide. P130-142. 2002.
- 4. Slavin, J. "Dietary Fiber: Mechanisms or Magic in Disease Prevention?" *Nutrition Today*. Nov/ Dec. 1990.
- 5. Institute of Medicine. Dietary Reference Intakes for Energy, Carbohydrate, Fiber, Fat, Fatty Acids, Cholesterol, Protein, and Amino Acids (Macronutrients). National Academy Press p. 265-334. 2002.

HIGH PROTIEN DIETS

15

OBJECTIVE:

• A high-protein diet (HPD) is known to promote the reduction of body fat

INTRODUCTION:

A **high-protein diet** is often recommended by bodybuilders and <u>nutritionists</u> to help efforts to build muscle and lose fat. It should not be confused with low-carb <u>diets</u> such as the Atkins Diet, which are not calorie-controlled and which often contain large amounts of fat.

While adequate <u>protein</u> is required for building skeletal muscle and other tissues, there is ongoing debate regarding the use and necessity of high-protein diets in anaerobic exercise in particular weight training and bodybuilding. The current recommended daily allowance for protein is 45 to 60 grams per day.

Details about the Patient History:

- 1. Patient / Person General Information:
- 2. Anthropometric Measurements:
- 3. Past Medical Condition:
- 4. Present Medical Condition:
- 5. Food Habits:

Centre for Distance Education-	(Acharya Nagarjuna University)
6. Principles of the Diet:			

Name of the Diet: _____ Category: _____

TABLE 1: DIET PLAN FOR HIGH PROTEIN

SUGGESTED MEAL OUTLINE	Ingredients	Weight/volume of each ingredient	Preparation instructions (directions)

Number of Serving sizes:_____

Method of Preparation: _____

M.Sc., F&NIIY: Clinical Nutrition and Dietetics 17 - Practical Manual II - Dietetics & Diet Therapy

TABLE 2: CALCULATIONS FOR DIETARY NUTRIENTS

Ingredients	Weight/		Macro nutrients				Micro	nutrie	ents
	volume of	сно	Protein	Fat	Fiber	Vit	Vit	Vit-	Folic
	ingredient					Α	-В	с	acid
	Total:								

SELF ASSESSMENT QUESTIONS:

- 1. What are the high protein food groups?
- 2. What is the protein requirement for a 6 years girl child?

- 1. Bilsborough, Shane; Mann, Niel (April 2006). "A review of issues of dietary protein intake in humans". *International Journal of Sport Nutrition and Exercise Metabolism* **16** (2).
- 2. "Protein: Moving Closer to Center Stage". Harvard School of Public Health. Retrieved 8 August 2013.
- 3. Walter F., PhD. Boron. *Medical Physiology: A Cellular And Molecular Approach*. Elsevier/ Saunders. p. 771.
- 4. "USDA National Nutrient Database for Standard Reference Release 25: Nutrient data for 16122, Soy protein isolate". United States Department of Agriculture. Retrieved 8 August 2013.
- 5. "USDA National Nutrient Database for Standard Reference, Release 25: Protein (g) Content of Selected Foods per Common Measure, sorted alphabetically". United States Department of Agriculture. 2012. Retrieved 8 August 2013.

LOW PROTEIN DIET

18

OBJECTIVE:

To prevent or minimize muscle and tissue breakdown, hence sufficient calories are provided with liberal use of carbohydrates and fats.

INTRODUCTION:

A **low-protein diet** is any diet in which the protein intake is reduced. Anyone diagnosed with kidney or liver disease may be prescribed a low-protein diet. In any case, a diet which is especially low in protein should only be undertaken under medical direction.

Protein is necessary for a healthy body. When protein is metabolized by the liver and digested, urea is produced as a waste product. If the liver is diseased, then food metabolism is compromised. If the kidneys, which are responsible for excretion of urea, are not functioning properly (renal failure), or if high levels of protein are continually present in the diet, urea builds up in the bloodstream causing loss of appetite and fatigue. A low-protein diet will reduce the workload on these organs.

It is usually the case that serious liver and kidney disease are accompanied by the need to limit salt or sodium intake due to high blood pressure or fluid retention. Table salt (the primary source of sodium in the diet) should therefore be limited, along with other foods with a high sodium content, as an additional feature of the low-protein diet.

Details about the Patient History:

- 1. Patient / Person General Information:
- 2. Anthropometric Measurements:
- 3. Past Medical Condition:
- 4. Present Medical Condition:
- 5. Food Habits:

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	6.	Principles of the Diet:		

Name of the Diet: _____ Category: _____

TABLE 1: DIET PLAN FOR LOW PROTEIN

SUGGESTED MEAL OUTLINE	Ingredients	Weight/volume of each ingredient	Preparation instructions (directions)

Number of Serving sizes:_____

Method of Preparation: _____

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Ingredients	Weight/	Macro nutrients				Micro nutrients			ents
	volume of	сно	Protein	Fat	Fiber	Vit	Vit	Vit-	Folic
	ingredient					Α	-В	с	acid
	Total:								

TABLE 2: CALCULATIONS FOR DIETARY NUTRIENTS

SELF ASSESSMENT QUESTIONS:

- 1. Why should the kidney patients follow a low protein diet?
- 2. How is a low-protein diet achieved?

- 1. Feskanich D, Willett WC, Stampfer MJ, and Colditz GA (1995) Protein consumption and bone fractures in women. American Journal of Epidemiology vol 143 pages 472-479.
- 2. Alayev A and Holz MK (2013) mTOR signaling for biological control and cancer. Journal of Cell Physiology vol 228 pages 1658-1664
- 3. Jewell JL and Guan K-L (2013) Nutrient signaling to mTOR and cell growth. Trends in Biochemical Sciences vol 38 pages 233-242
- 4. Pollak MN, Schernhammer ES and Hankinson SE (2004) Insulin-like growth factors and neoplasia. Nature Reviews Cancer vol 4 pages 505-518
- 5. Thissen J-P, Ketelslegers J-M and Underwood LE (1994) Nutritional regulation of the Insulinlike growth factors. Endocrine Reviews vol 15 pages 80-101

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LOW SODIUM DIETS

21

OBJECTIVE:

• The low-sodium diet is a known preventive factor for hypertension and cardiovascular disease. Factors associated with low-sodium diets should be identified to reduce sodium intake effectively.

INTRODUCTION:

A main source of sodium is table salt. The average American eats five or more teaspoons of salt each day. This is about 20 times as much as the body needs. In fact, our body needs only 1/4 teaspoon of salt every day. Sodium is found naturally in foods, but a lot of it is added during processing and preparation. Many foods that do not taste salty may still be high in sodium. Large amounts of sodium can be hidden in canned, processed and convenience foods. And sodium can be found in many foods that are served at fast food restaurants.

Sodium controls fluid balance in our bodies and maintains blood volume and blood pressure. Eating too much sodium may raise blood pressure and cause fluid retention, which could lead to swelling of the legs and feet or other health issues.

When limiting sodium in our diet, a common target is to eat less than 2,000 milligrams of sodium per day.

General Guidelines for Cutting Down on Salt

- Eliminate salty foods from our diet and reduce the amount of salt used in cooking. Sea salt is no better than regular salt.
- Choose low sodium foods. Many salt-free or reduced salt products are available. When reading food labels, low sodium is defined as 140 mg of sodium per serving.
- Salt substitutes are sometimes made from potassium, so read the label.
- Be creative and season our foods with spices, herbs, lemon, garlic, ginger, vinegar and pepper. Remove the salt shaker from the table.
- Read ingredient labels to identify foods high in sodium. Items with 400 mg or more of sodium are high in sodium. High sodium food additives include salt, brine, or other items that say sodium, such as monosodium glutamate.
- Eat more home-cooked meals. Foods cooked from scratch are naturally lower in sodium than most instant and boxed mixes.

 Centre for Distance Education)	22	<u> </u>	Acharva Nagariuna University	⊢
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- Don't use softened water for cooking and drinking since it contains added salt.
- Avoid medications which contain sodium such as Alka Seltzer and Bromo Seltzer.

DETAILS ABOUT THE PATIENT HISTORY:

- 1. Patient / Person General Information:
- 2. Anthropometric Measurements:
- 3. Past Medical Condition:
- 4. Present Medical Condition:
- 5. Food Habits:
- 6. Principles of the Diet:

Name of the Diet: _____ Category: _____

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TABLE 1: DIET PLAN FOR MECHANICAL SOFT DIET

23

SUGGESTED MEAL OUTLINE	Ingredients	Weight/volume of each ingredient	Preparation instructions (directions)

Number of Serving sizes:_____

Method of Preparation: _____

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TABLE 2: CALCULATIONS FOR DIETARY NUTRIENTS

Ingredients	Weight/		Macro nutrients			Micro	nutrie	ents	
	volume of	сно	Protein	Fat	Fiber	Vit	Vit	Vit-	Folic
	ingredient					Α	-В	с	acid
	Total:								

SELF ASSESSMENT QUESTIONS:

- 1. List of low sodium foods in fruits?
- 2. What are the stages of hypertension?

- 1. He FJ, MacGregor GA. How far should salt intake be reduced? Hypertension 2003; 42:1093.
- 2. Appel LJ, Espeland MA, Easter L, et al. Effects of reduced sodium intake on hypertension control in older individuals: results from the Trial of Nonpharmacologic Interventions in the Elderly (TONE). Arch Intern Med 2001; 161:685.
- 3. He FJ, Li J, Macgregor GA. Effect of longer term modest salt reduction on blood pressure: Cochrane systematic review and meta-analysis of randomised trials. BMJ 2013; 346:f1325.
- Chobanian AV, Bakris GL, Black HR, et al. Seventh report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure. Hypertension 2003; 42:1206.

SODIUM RESTRICTED DIETS

25

OBJECTIVE:

• Salt restriction, recommended as the first-line treatment of hypertension, edema has been proposed to lead to deficiencies in intakes of some other nutrients.

INTRODUCTION:

Sodium may need to be restricted in the diet for a variety of reasons including congestive heart failure, high blood pressure, and diseases associated with fluid imbalance like kidney and liver diseases.

BASIC PRINCIPLES

Prepare and eat foods without adding salt. Eliminate high sodium processed foods from the diet. Ask to dietitian or physician before using salt substitutes.

SODIUM SOURCES

The main source of sodium in the diet is salt. One teaspoon of salt contains about 2,000 milligrams (mg) of sodium.

The average diet has 4,000 to 6,000 mg sodium a day while the recommended amount is only 2,400 mg sodium a day.

The sodium found in unsalted food is adequate to meet our body's need for sodium.

HELPFUL HINTS

- Experiment with herbs and spices to add flavor to foods.

- When dining out ask for foods prepared without added salt. Also, avoid high sodium foods like soups and foods with sauces or cheese.

- Softened water is higher in sodium. Use bottled water or switch to a calcium salt in water softener.

- Be aware that some medications, such as antacids, laxatives, and antibiotics, can contain sodium.

- Omit foods with greater than 400 mg per serving; limit foods with 200-400 mg sodium per serving to 1-2 servings per meal.

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- Use the guidelines below to help with reading labels.

o **Sodium-free:** less than 5 mg per serving

o Low sodium: 140 mg or less per serving

- Unsalted, without added salt, no salt added: no salt added during processing

Details about the Patient History:

- 1. Patient / Person General Information:
- 2. Anthropometric Measurements:
- 3. Past Medical Condition:
- 4. Present Medical Condition:
- 5. Food Habits:
- 6. Principles of the Diet:

Name of the Diet: _____ Category: _____

TABLE 1: DIET PLAN FOR MECHANICAL SOFT DIET

27

SUGGESTED MEAL OUTLINE	Ingredients	Weight/volume of each ingredient	Preparation instructions (directions)

Number of Serving sizes:_____

Method of Preparation: _____

28 >--

1600	2000	Typical Serving Size			
6	7-8	1/2 cup cooked rice, 1 (large) slice bread			
3-4	4-5	1 cup salad, 1/2 cup cooked vegetable			
4	4-5	180 ml juice, 1 medium fruit			
2-3	2-3	1 cup yoghurt (curd) or milk, 45 g cheese			
1-2	1-2	90 g cooked meat, fish, poultry			
3/wk	4-5/wk	½ cup cooked lentils (dals), 45 g nuts			
2	2	1 tsp oil/margarine, 1 tbsp low fat dressing			
2/wk	2/wk	1 tbsp sugar or jam			
	1600 6 3-4 4 2-3 1-2 3/wk 2 2/wk	1600 2000 6 7-8 3-4 4-5 4 4-5 2-3 2-3 1-2 1-2 3/wk 4-5/wk 2 2 2/wk 2/wk			

TABLE 2: CALCULATIONS FOR DIETARY NUTRIENTS

SELF ASSESSMENT QUESTIONS:

- 1. What is the difference between low sodium and sodium restricted diets?
- 2. Mention the stages of hypertension?

- 1. Heart Failure Society of America, How to follow a low sodium diet.
- 2. Implementing recommendations for dietary salt reduction: Where are we? DIANE Publishing.
- 3. Taylor, RS; Ashton, KE; Moxham, T; Hooper, L; Ebrahim, S (Jul 6, 2011). "Reduced dietary salt for the prevention of cardiovascular disease.". *Cochrane database of systematic reviews* (*Online*) (7).
- 4. Dinicolantonio, JJ; Pasquale, PD; Taylor, RS; Hackam, DG (Jan 24, 2013). "Low sodium versus normal sodium diets in systolic heart failure: systematic review and meta-analysis.". *Heart (British Cardiac Society)*
- 5. Jump up no author given (June 2013). "Retraction. Low sodium versus normal sodium diets in systolic heart failure: systematic review and meta-analysis. Heart. Published Online First: 21 August 2012 doi:10.1136/heartjnl-2012-302337". *Heart* 99 (11).
- 6. Amarcus 41. "Heart pulls sodium meta-analysis over duplicated, and now missing, data". Retraction Watch. Retrieved 2013-09-29.
- 7. He FJ, MacGregor GA. Effect of longer-term modest salt reduction on blood pressure. Cochrane Database of Systematic Reviews 2004, Issue 1.

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CALCIUM RESTRICTED DIETS

29

OBJECTIVE:

• To prevent and treat hypercacimea

INTRODUCTION:

The calcium restricted diets are prescribed for patients with hypercalcimea or hypercalciuria. These conditions may be caused by hypervitaminosis D causing an increasing in calcium absorption from the intestine and calcium leaching from bone; hyperparathyroidism that is not operable; idiopathic hypercalciuria caused by primary intestine over absorption of calcium. Some individuals are more sensitive to high levels of calcium in the diet and antacid compounds containing calcium. Use of large amounts of non calcium containing antacid such as Maalox and Amphogel that bind phosphate in the gut increases the absorption of calcium.

As a precaution against hypercalciuria and urolithiasis in patients immobilized by spinal cord injury, calcium intake is restricted. For those patients the intake of calcium is generally restricted to 600mg to 800mg per day.

RENAL DIET MANAGEMENT

The use of nutrition therapy aims to retard progression of the kidney disease. It is to afford rest to the organ and to minimize uremic toxicity.

Diet and meal plan is computed based on the treatment plan for each patient. An allowance for specific food and nutrient intake varies depending on the stage of the renal disease.

LOW CALCIUM DIET

This diet is advised to patients with calcium oxalate renal stones. It is designed to minimize the concentration of the components associated in the formation of renal stones.

DETAILS ABOUT THE PATIENT HISTORY:

- 1. Patient / Person General Information:
- 2. Anthropometric Measurements:

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3. Past Medical Conditi	on:		

- 4. Present Medical Condition:
- 5. Food Habits:
- 6. Principles of the Diet:

Name of the Diet:	Category:
	Outogoly:

TABLE 1: DIET PLAN FOR MECHANICAL SOFT DIET

SUGGESTED MEAL OUTLINE	Ingredients	Weight/volume of each ingredient	Preparation instructions (directions)

M.Sc., F& N II Y : Clinical Nutrition and Dietetics 31	Practical Manual II - Dietetics & Diet Therapy
Number of Serving sizes:	

Method of Preparation: _____

TABLE 2: CALCULATIONS FOR DIETARY NUTRIENTS

Ingredients	Weight/	Macro nutrients			Micro	nutrie	ents		
	volume of	сно	Protein	Fat	Fiber	Vit	Vit	Vit-	Folic
	ingredient					Α	-В	с	acid
	Total:								

SELF ASSESSMENT QUESTIONS:

- 1. What is the difference between low calcium and calcium restricted diets?
- 2. Mention any ten low calcium food sources in fruits and vegetables?

- 1. Sources: Hallberg L, Hulthen L, Prediction of Dietary Iron Absorption: An Algorithm for Calculating Absorption and Bioavailability of Dietary Iron. *American Journal of Clinical Nutrition* 2000, 71: 1147-60.
- 2. The American Dietetic Associations' Complete Food & Nutrition Guide, 2nd ed. 2002 USDA National Nutrient Database.

LOW FAT DIETS

OBJECTIVE:

• Promote health and reduce chronic disease risk through the consumption of healthful diets and achievement and maintenance of healthy body weights.

INTRODUCTION:

A low Fat Diet is recommended in the treatment of gallbladder disease in which dietary fat may cause painful gallbladder contraction during the secretion of bile. It is also recommended in the treatment of pancreatic or biliary tract disease in which fat malabsorption and steatorrhea may occur, secondary to reduced lipase secretion.

GENERAL INSTRUCTIONS:

The recommended dietary intake of fat for the treatment of gallbladder and biliary tract disease has never been scientifically determined. However, it appears that most patients tolerate 40-50 grams of fat/day. Total fat intake may be specified in the diet prescription. Unless otherwise specified, fat intake is limited to 40-50 grams/day, as tolerated by the patient.

For patients who have severe fat malabsorption or who cannot obtain adequate kilocalories on 50 grams of fat/day, supplementation with medium chain triglycerides (MCT) is highly recommended. MCT oil does not require bile for emulsification or lipase for enzymatic digestion.

Intolerance of certain strongly flavored vegetables, legumes, melons and berries occurs in many patients with gallbladder disease; the reason for this is not known. Typically, most persons with gallbladder disease are overweight and should be given a kilocalorie restricted diet. Although the chief component of gallstones is cholesterol, dietary restriction of cholesterol is probably not very effective in the prevention of gallstone formation.

Fat digestion appears to be unimpaired following a cholecystectomy. Patients who have undergone cholecystectomies should be able to follow a diet of normal composition soon after surgery without any digestive difficulties.

Details about the Patient History:

- 1. Patient / Person General Information:
- 2. Anthropometric Measurements:

- M.Sc., F& N II Y : Clir	nical Nutrition and Dietetics 33 Practical Manual II - Dietetics & Diet Therapy
3.	Past Medical Condition:
4	Present Medical Condition:
4.	
F	Food Hobitor
Э.	FOOD Habits:
6.	Principles of the Diet:

Name of the Diet: _____ Category: _____

TABLE 1: DIET PLAN FOR MECHANICAL SOFT DIET

SUGGESTED MEAL OUTLINE	Ingredients	Weight/volume of each ingredient	Preparation instructions (directions)

Centre for Distance Education 34 Acharya Nagarjuna University	-
Number of Serving sizes:	

Method of Preparation: _____

TABLE 2: CALCULATIONS FOR DIETARY NUTRIENTS

Ingredients	Weight/	Macro nutrients			Micro nutrients				
	volume of	сно	Protein	Fat	Fiber	Vit	Vit	Vit-	Folic
	ingredient					Α	-В	с	acid
	Total:								

SELF ASSESSMENT QUESTIONS:

1 What are Trans Fats?

2 What foods are high in fat? What are some foods that are low in fat and better to eat?

- 1. Randi G, Franceschi S, La Vecchia C. Gallbladder cancer worldwide: geographical distribution and risk factors. Int J Cancer. 2006;118:1591–1602.
- 2. Zatonski WA, Lowenfels AB, Boyle P, Maisonneuve P, Bueno de Mesquita HB, Ghadirian P, et al. Epidemiologic aspects of gallbladder cancer: a case-control study of the SEARCH Program of the International Agency for Research on Cancer. J Natl Cancer Inst. 1997;89:1132–1138.
- 3. Nandakumar A, Gupta PC, Gangadharan P, Visweswara RN, Parkin DM. Geographic pathology revisited: development of an atlas of cancer in India. Int J Cancer. 2005;116:740–754.

EXPERIMENT-1

HYPERTENSION

35

INTRODUCTION:

High blood pressure also known as hypertension is a condition that increases the risk for heart attack, stroke, kidney failure, coronary heart disease, and other serious health problems. Blood pressure is the force of blood pushing against the inside walls of arteries. The harder your heart pumps and the narrower your arteries are, the higher your blood pressure rises. Over time, the wear and tear caused by untreated high blood pressure can damage your blood vessels and vital losing weight if you need to organs.

There are many options in the treatment of high blood pressure. Learn how often your blood pressure should be checked, how to monitor your own blood pressure at home, and the different tools and methods used to keep an accurate blood pressure tally. Exercise, healthy diet, cutting back if you drink a lot of alcohol, stopping smoking, cutting down on salt and caffeine.

OBJECTIVE:

- To maintain Ideal body weight through regular exercise.
- To control Sodium intake to manage hypertension in sodium sensitive persons.
- To promote the loss of excess fluids in edema and as cites.

GENERAL INFORMATION:

Name:

Age:

Sex:

Occupation:

Educational status:

Income level:

Vegetarian/Non vegetarian:

Physical activity or inactivity:

- - Centre for Distance Education - - - 36 - - - Acharya Nagarjuna University -

ANTHROPOMETRIC MEASUREMENTS:

Height(cm):

Weight(kg):

Body Mass Index (BMI):

Waist/Hip ratio:

BIOCHEMICAL ANALYSIS:

Mention if any?

PHYSIOLOGICAL ASPECTS:

Blood pressure (mm/Hg):

CLINICAL SYMPTOMS:

Identify if any?

INDICATIONS FOR USE :

Congestive heart failure

Hypertension

Renal disease

Liver disease

Steroid therapy

Cardiac surgery

In addition, moderate sodium restriction may be advisable for the general population.

DIETARY ASSESSMENT:

DIETARY MODIFICATION:

- Eat more fruits, vegetables, and low-fat dairy foods
- Cut back on foods that are high in saturated fat, <u>cholesterol</u>, and trans fats
- Eat more whole grain products, fish, poultry, and nuts
- Eat less red meat (especially processed meats) and sweets
- Eat foods that are rich in magnesium, potassium, and calcium
M.Sc., F&NIIY: Clinical Nutrition and Dietetics 37 - (Practical Manual II - Dietetics & Diet Therapy)

The DASH diet, which stands for Dietary Approaches to Stop Hypertension, is an example of such an eating plan. In research studies, patients who were on the DASH diet lowered their <u>blood</u> <u>pressure</u> within two weeks. Another diet — DASH-Sodium — calls for cutting back sodium (salt) to 1,500 mg a day (about 2/3 teaspoon). Studies of people on the DASH-Sodium plan significantly lowered their blood pressure as well.

Moderate restriction (<3000mg Na per day)

- A small amount (1-2g of salt Na Cl per day) may be used in cooking
- No salt to be added at the table.
- Highly salted foods and condiments should be avoided.

Strict restriction (<2000mg Na per day)

- No salt to be added in cooking or at the table.
- Highly salted foods and condiments should be avoided.
- Processed foods with salt or other sodium compounds such as Na benzoate, disodium phosphate, Na citrate, monosodium glutamate, Na propionate, Na alginate and Na sulfite are eliminated.
- Salt-free bread and butter should be used.

Obesity is a significant risk factor for hypertension.

TREATMENT OF HYPERTENSION :

It is recommended that lifestyle modification for 3-6 months before starting on medications. Treatment for hypertension includes

- · Control of body weight
- Restriction of dietary sodium to no more than 2400 mg sodium (6 g of salt (NaCl) per day)
- Limiting alcohol intake. Consumption should not exceed 1-2 oz of ethanol per day. (One drink = 5 oz wine, 12 oz beer, 1.5 oz of 80-proof liquor)
- · Adequate intake of potassium
- Adequate intake of dietary calcium and magnesium
- Regular aerobic exercise of 30-45 minutes per day
- Smoking cessation
- Lower fat consumption for overall cardiac health.

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The 'Dietary Approaches to Stop Hypertension' (DASH) Diet is used for prevention and controlling hypertension. It emphasizes increase in low fat dairy, fruit and vegetable consumption and reduction in fats, sweets and red meat consumption.

Number of DASH Diet Servings for Different Energy Levels -

Calories	1600	2000	Typical Serving Size	
Food Group				
Grains	6	7-8	1/2 cup cooked rice, 1 (large) slice bread	
Vegetables	3-4	4-5	1 cup salad, ½ cup cooked vegetable	
Fruit	4	4-5	180 ml juice, 1 medium fruit	
Low/non-fat dairy	2-3	2-3	1 cup yoghurt (curd) or milk, 45 g cheese	
Leanmeat,	1-2	1-2	90 g cooked meat, fish, poultry	
Nuts,seeds, Legumes	3/wk	4-5/wk	½ cup cooked lentils (dals), 45 g nuts	
Fats & oils	2	2	1 tsp oil/margarine, 1 tbsp low fat dressing	
Sweets	2/wk	2/wk	1 tbsp sugar or jam	

Reference – National Institutes of Health, US Dept of Health & Human Services, 2009.

Note – please make suitable changes to suit the Indian dietary practices.

Adequacy – Nutrition is adequate when meals are planned according to standard guidelines. Note: For Food group's recommendations, Foods avoided, Foods allowed and principles of diet check NIN manual.

SELF ASSESSMENT QUESTIONS

- 1. Describe the importance of diet for a Hypertension patient?
- 2. Mention principles of diet in Hypertension?
- 3. Plan and prepare a sample diet for a Hypertension patient?

REFERENCES:

- Chicago Dietetic Association and the South Suburban Dietetic Association. 1996. Manual of Clinical Dietetics. 5th Edition. The American Dietetic Association, Chicago, III.
- Province of Nova Scotia. 1990. Diet Manual. Victoria General Hospital, Nova Scotia, Canada
- Mahan, LK and Escott-Stump, S. 2004. Krause's Food, Nutrition and Diet Therapy. 11th Edition. Saunders, Philadelphia, Pennsylvania.
- National Institutes of Health, US Dept of Health & Human Services, 2009. The DASH Diet Eating Plan.

EXPERIMENT -1.1

ATHEROSCLEROSIS

39

INTRODUCTION:

Atherosclerosis is a disease in which plaque builds up inside your arteries. Arteries are blood vessels that carry oxygen-rich blood to your heart and other parts of your body. Plaque is made up of fat, cholesterol, calcium, and other substances found in the blood. Over time, plaque hardens and narrows your arteries. This limits the flow of oxygen-rich blood to your organs and other parts of your body. Atherosclerosis can lead to serious problems, including **heart attack**, **stroke**, or even death.

Atherosclerosis is a narrowing of the arteries that can significantly reduce the blood supply to vital organs such as the heart, brain and intestines. In atherosclerosis, the arteries are narrowed when fatty deposits called plaques build up inside. Plaques typically contain cholesterol from lowdensity lipoproteins (LDL), smooth-muscle cells and fibrous tissue, and sometimes calcium As a plaque grows along the lining of an artery, it produces a rough area in the artery's normally smooth surface. This rough area can cause a blood clot to form inside the artery, which can totally block blood flow. As a result, the organ supplied by the blocked artery starves for blood and oxygen. The organ's cells may either die or suffer severe damage.

OBJECTIVE:

- To maintain HDL level (the "good cholesterol")
- To control blood pressure levels.

GENERAL INFORMATION:

Name:

Age:

Sex:

Occupation:

Educational status:

Income level:

Vegetarian/Non vegetarian:

Physical activity or inactivity:

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ANTHROPOMETRIC MEASUREMENTS:

Height(cm): Weight(kg): Body Mass Index (BMI): Waist/Hip ratio:

BIOCHEMICAL ANALYSIS:

Mention if any? Lipid profile:

PHYSIOLOGICAL ASPECTS:

Blood pressure (mm/Hg):

CLINICAL SYMPTOMS:

Identify if any?

DIETARY MODIFICATION:

Calories:

According to the national guidelines, you should eat at least 2 cups of fruit and 2 ½ cups of vegetables per day (for a reference 2,000-calorie intake diet), with higher or lower amounts depending on your recommended calorie level. Select a variety of fruits and vegetables each day and choose from all five vegetable subgroups (dark green, orange, legumes, starchy vegetables, and other vegetables) several times a week. A major 2002 study proved that consuming at least three or more servings of fruits and vegetables was associated with a reduced risk of coronary artery disease and stroke and all-cause mortality in the general U.S. population.

40

Fats:

Following a low-fat diet can help you manage high blood cholesterol, diabetes and obesity – three of the four risk factors for coronary artery disease. According to the dietary guidelines published by the U.S. Department of Health and Human Services, Americans should limit saturated fats to less than seven percent of total daily calories (16 grams for a 2,000 calorie diet), and less than 300 mg/dL of cholesterol. Trans fatty acid consumption should be kept as low as possible, as there is no safe level of this type of fat, which comes from fried foods as well as foods that list "partially hydrogenated" or "hydrogenated" on the ingredient list. Total fat should not exceed 35 percent of total daily calories (ranging from 20 to 35 percent), and most fats should come from polyunsaturated and monounsaturated fats, such as fish, nuts, and vegetable oils. Protein sources—including meat, poultry, dry beans and dairy products—should be lean, low-fat, or fat-free. Fats and oils high in saturated and/or transfatty acids should be limited.

- M.Sc., F& N II Y : Clinical Nutrition and Dietetics 41 - Practical Manual II - Dietetics & Diet Thera

As part of a diet low in saturated fat and cholesterol, soy protein (25 grams a day as a substitute for animal protein) has also been shown to reduce the risk of coronary artery disease (CAD).

Nuts are a great source of monounsaturated fat as well as dietary fiber, and researchers have linked regular nut intake to a lower incidence of coronary artery disease. Eating fresh or dry roasted nuts in moderation (1 ounce or less daily) provides many protective nutrients. To get the most heart-healthy benefits from nuts, stay away from nuts that are salted, coated in sugar, or roasted in Omega-3 fatty acids are healthy fats that moderately reduce blood triglycerides (fats) and elevate levels of HDL (the "good" type) cholesterol, thereby reducing the progression of atherosclerosis. Omega-3 fatty acids can be found in cold-water fish and flax seeds, as well as some other foods. The American Heart Association recommends eating omega-3-rich fish at least twice a week (total of 6 ounces per week). Fish oil and flax oil supplements are also good sources of omega-3 fatty acids, but fish intake is preferred when possible. Patients taking more than 3 grams of omega-3 fatty acids in the form of supplements should consult their doctor, as high intake can cause bleeding in some people. When buying fish oil supplements, look for the highest levels of docosahexaenoic acid (DHA) and eicosapentenoic acid (EPA), which should make up more than 50 percent of the total milligrams of the dosage.

HIGH-FIBER :

Dietary fiber helps to reduce elevated cholesterol, one of the risk factors for coronary artery disease. Fiber, the part of plants the body cannot digest, also helps to control blood sugar and manage weight, while also reducing the risk of gastrointestinal disease by increasing bowel regularity. The recommended intake for total fiber for adults up to age 50 is 25 grams per day for women and 38 grams for men. For those over age 50, the recommended intake is 21 grams for women and 30 grams for men. To consume enough fiber, eat whole grain products, fruits and vegetables, and legumes (such as dry beans, lentils, and peas).

MINERALS :

As part of a low-fat, low-cholesterol diet, the consumption of plant sterols and stanols in certain food products and/or dietary supplements (in soft gel form), has been shown to lower LDL and total cholesterol,

There by reducing coronary artery disease risk.

When taken as a dietary supplement, garlic has several heart protective properties and has been shown to slightly lower blood cholesterol levels and reduce overall coronary artery disease risk. Some studies suggest that garlic can also help lower high blood pressure, although the evidence is not conclusive. Patients taking garlic supplements should consult their doctor, as it can cause bleeding in some people.

It is a good idea for everyone to limit salt, but it is especially important for patients managing high blood pressure. Whether or not consuming salt actually causes high blood pressure has been a matter of debate, and recent studies indicate that high blood pressure may be more closely linked to a diet lacking in essential minerals. However, limiting salt intake is still important. It is recommended that a person should consume no more than 1,500 mg of sodium per day, and meet the potassium recommendation (4,700 mg/day) with food.

– – Centre for Distance Education) – – – 42 – Acharya Nagarjuna University – – –

Note: For Food group's recommendations, Foods avoided,

Foods allowed and principles of diet check NIN manual.

SELF ASSESSMENT QUESTIONS

- 1. Describe the importance of diet for an Atherosclerosis patient?
- 2. Mention principles of diet in Atherosclerosis?
- 3. Plan and prepare a sample diet for an Atherosclerosis patient?

REFERENCES

Bazzano LA, He J, Ogden LG, et al. <u>Fruit and vegetable intake and risk of cardiovascular disease in</u> <u>US adults: the first National Health and Nutrition Examination Survey Epidemiologic Follow-up Study</u>. Am J Clin Nutr. 2002;76(1):93-99.

The <u>American Heart Association</u> offers a wealth of information on diet and nutrition as well as a variety of ways to <u>prevent or manage coronary artery disease</u>.

"Dietary Guidelines for Americans" and additional nutrition information is available from the <u>National</u> <u>Agricultural Library, Food and Nutrition Information Center</u> and from the <u>American Dietetic Association</u>.

- M.Sc., F& N II Y : Clinical Nutrition and Dietetics

EXPERIMENT - 1.2

MYOCARDIAL INFRACTION

43

INTRODUCTION:

Blockage of the blood vessels supplying the muscles of the heart can result in a myocardial infarction (MI), or heart attack. Without adequate blood supply, the affected muscle tissue is rapidly deprived of oxygen and essential nutrients, resulting in immediate and permanent damage.

Myocardial infarction, commonly known as a heart attack, can happen at any moment. These occur when inadequate blood flow or a lack of oxygen damages the heart muscle. Diet also plays an important role in reducing the risk for a myocardial infarction. If you are at risk for or have already experienced a heart attack, it is important to follow a heart healthy diet and to exercise.

Heart attack is caused by the blockage of a coronary artery by plaque or by a thrombus (blood clot). Atherosclerosis is a gradual buildup of cholesterol, fibrous tissue, and other substances in plaques which deposits on the arterial walls. These plaques cause hardening of the arteries and narrowing of the artery. When coronary arteries narrow due to atherosclerosis, this disease is known as coronary artery disease, which is the most common underlying cause of heart attacks. A coronary artery could become completely blocked by plaque. However, the plaques from atherosclerosis could instead rupture and produce a thrombus (or blood clot) and if the clot is in the coronary artery, the blood flow will be interrupted and causes permanent damage and death of cardiac muscle in that area. An uncommon cause of heart attacks is spasm of a coronary artery that interrupts blood flow to a part of the cardiac muscle.

OBJECTIVE:

- To maintain healthy through balanced diets.
- To control stress through diet.
- To maintain cholesterol levels.

GENERAL INFORMATION:

- Name:
- Age:
- Sex:
- Occupation:
- Educational status:

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- Income level:
- Vegetarian/Non vegetarian:
- Physical activity or inactivity:

ANTHROPOMETRIC MEASUREMENTS:

- Height(cm):
- Weight(kg):
- Body Mass Index (BMI):
- Waist/Hip ratio:

BIOCHEMICAL ANALYSIS:

- Mention if any?
- Lipid profile:

PHYSIOLOGICAL ASPECTS:

Blood pressure (mm/Hg):

CLINICAL SYMPTOMS:

Identify if any?

DIETARY MODIFICATION:

For a 2,000-calorie diet, it is recommended that you consume six to eight 1-ounce servings of grains; four to five 1-cup servings of vegetables; four to five 1-cup servings of fruit; two to three 8-ounce servings of fat-free or low-fat milk or milk products; and six 1-ounce servings of lean meat, poultry and fish per day. The DASH diet also recommends that you have four to five 1/3-cup servings of nuts, seeds and legumes each week. Limit your fats and oils to two to three servings per day and have five or fewer servings of added sugars per week. In addition to this meal plan, it is important to limit your sodium intake to 2,300 milligrams, drop your cholesterol to 150 milligrams and reduce your saturated fat intake to 6 percent of total calories, per day.

25-35 percent of the day's total calories from fat.

Less than 200 milligrams of dietary cholesterol a day.

Limit sodium intake to 2400 milligrams a day.

- M.Sc., F& N II Y : Clinical Nutrition and Dietetics 45 - Practical Manual II - Dietetics & Diet Therapy

Just enough <u>calories</u> to achieve or maintain a healthy weight and reduce your blood cholesterol level. (Ask your doctor or registered dietitian what is a reasonable calorie level for you Less than 7 % of the days total calories from saturated fat.

Note: For Food group's recommendations, Foods avoided, Foods allowed and principles of diet check NIN manual.

SELF ASSESSMENT QUESTIONS

- 1. Describe the importance of diet for a Myocardial infarction patient?
- 2. Mention principles of diet in Myocardial infarction?
- 3. Plan and prepare a sample diet for a myocardial infarction patient?

REFERENCES:

1. Eckle T *et al.*, Hypoxia-Inducible Factor-1 is Central to Cardioprotection: A New Paradigm for Ischemic Preconditioning. Circulation 118: 166-175 (2008).

2. Health.Com: The Therapeutic Lifestyle Changes Diet for Heart Disease. Web.<u>http://www.health.com/health/condition-article/0</u>, 20189114, 00.html.

EXPERIMENT -1.3

CONGESTIVE CARDIAC FAILURE

46

INTRODUCTION:

Congestive heart failure (CHF) occurs when the heart isn't able to pump blood normally. As a result, there is not enough blood flow to provide the body's organs with oxygen and nutrients. The term "heart failure" does not mean that the heart stops beating completely, but that the heart is not working as efficiently Congestive heart failure, in simple terms, is when the heart fails to maintain an adequate circulation of blood around the body owing to a defect in the heart's pumping action.

Heart failure does not mean the heart has stopped working. Rather, it means that the heart's pumping power is weaker than normal. With heart failure, blood moves through the heart and body at a slower rate, and pressure in the heart increases. As a result, the heart cannot pump enough oxygen and nutrients to meet the body's needs. The chambers of the heart may respond by stretching to hold more blood to pump through the body or by becoming stiff and thickened. This helps to keep the blood moving, but the heart muscle walls may eventually weaken and become unable to pump as efficiently. As a result, the kidneys may respond by causing the body to retain fluid (water) and salt. If fluid builds up in the arms, legs, ankles, feet, lungs, or other organs, the body becomes congested, and congestive heart failure is the term used to describe the condition.

A condition where the pumping efficiency of the heart is decreased and the supply of blood to the body is reduced. Congestive heart failure (CHF) has a number of potential causes, including High, Narrowed <u>Coronary Arteries</u> and <u>Heart Attack</u>.

OBJECTIVE:

- To reduce the cardiac workload,
- To observe edema of the extremities and breathlessness.
- Systolic dysfunction (reduced ejection fraction)
- Diastolic dysfunction (relaxation or filling abnormality)

GENERAL INFORMATION:

Name:

Age:

Sex:

Occupation:

-(M.Sc., F& N II Y : Clinical Nutrition and Dietetics	Ж	47	Practical Manual II - Dietetics & Diet Therapy)
		-			

Educational status:

Income level:

Vegetarian/Non vegetarian:

Physical activity or inactivity:

ANTHROPOMETRIC MEASUREMENTS:

Height(cm): Weight(kg): Body Mass Index (BMI): Waist/Hip ratio:

BIOCHEMICAL ANALYSIS:

Mention if any?

PHYSIOLOGICAL ASPECTS:

Blood pressure (mm/Hg):

CLINICAL SYMPTOMS:

Identify if any?

Indications for use – Assist drug therapy in treatment of Congestive Heart Failure and in management of cardiac cachexia.

DIETARY MODIFICATIONS -

Dietary modifications depend on individual signs of edema, breathlessness and overall nutritional status.

- Sodium restriction may range from 2000 3000 mg per day, depending on the severity of the disease. This is moderate and helps in ensuring compliance. The restriction may be as low as 500 1000 mg Na in hospital settings, if warranted.
- Energy requirement is 20-30% higher than basal requirements, based on Harris-Benedict equation, due to increased cardiac and pulmonary workload.
- High-calorie, high-protein diet may be required in underweight patients or those with cachexia.
- In obese individuals, weight loss may give relief to breathlessness.

- - Centre for Distance Education - 48 - Acharya Nagarjuna University - -
 - Fluid restriction of 1000 2000 ml is prescribed for those with severe heart failure.
 - Caffeine should be limited due to possible increase in heart rate and dysrhythmia.
 - Small frequent meals may reduce the workload of the heart while meeting full requirements.
 - High potassium may be required for patients on potassium-wasting diuretics.
 - Patients should be encouraged in self-monitoring, looking for fluid retention by way of rapid weight gain and edema in the extremities.

Adequacy – Nutrition is adequate when meals are planned according to guidelines. Those who are undernourished and have poor food intake may benefit from multivitamin supplementation.

Note: For Food group's recommendations, Foods avoided, Foods allowed and principles of diet check NIN manual.

SELF ASSESSMENT QUESTIONS

- 1. Describe the importance of diet for a Congestive cardiac failure patient?
- 2. Mention principles of diet in Congestive cardiac failure?
- 3. Plan and prepare a sample diet for a Congestive cardiac failure patient?

REFERENCES:

- Chicago Dietetic Association and the South Suburban Dietetic Association. 1996. Manual of Clinical Dietetics. 5th Edition. The American Dietetic Association, Chicago, III.
- Province of Nova Scotia. 1990. Diet Manual. Victoria General Hospital, Nova Scotia, Canada
- Mahan, LK and Escott-Stump, S. 2004. Krause's Food, Nutrition and Diet Therapy. 11th Edition. Saunders, Philadelphia, Pennsylvania.

EXPERIMENT - 2.1

NEPHROTIC SYNDROME

49

INTRODUCTION:

Nephritic syndrome may occur when the filtering units of the kidney are damaged. This damage allows protein normally kept in the plasma to leak into the urine in large amounts, which reduces the amount of protein in your blood. Since the protein in the blood helps keep fluid in the bloodstream, some of this fluid leaks out of the bloodstream into your tissues, causing swelling, and called edema. The swelling may be most noticeable in your legs after you have been standing and around your eyes when you first get up in the morning. Eventually, the swelling in your legs may be there all the time and it may also occur in other parts of your body. You may notice that your urine foams more than usual because of the amount of protein in it. Nephrotic syndrome are a collection of symptoms that indicate kidney damage.

Nephrotic syndrome includes the following:

- proteinuria—large amounts of protein in the urine
- hyperlipidemia—higher than normal fat and cholesterol levels in the blood
- edema, or swelling, usually in the legs, feet, or ankles and less often in the hands or face
- hypoalbuminia—low levels of albumin in the blood

Albumin is a protein that acts like a sponge, drawing extra fluid from the body into the bloodstream where it remains until removed by the kidneys. When albumin leaks into the urine, the blood loses its capacity to absorb extra fluid from the body, causing edema.

OBJECTIVE:

- To maintain fluid balance.
- To maintain mineral balance.
- To protect immune function, decreasing the risk of infections.
- It helps in improving the quality of life.

GENERAL INFORMATION:

Name:

Age:

Sex:

Occupation:



ANTHROPOMETRIC MEASUREMENTS:

Height(cm): Weight(kg): Body Mass Index (BMI): Waist/Hip ratio:

BIOCHEMICAL ANALYSIS:

Mention if any?

CLINICAL SYMTOMS:

Identify if any?

DIETARY RECOMMENDATIONS FOR NEPHROTIC SYNDROME:

Historically these patients received diets high in protein (1.2 - 1.5 g per kg per day) in an attempt to compensate urinary protein losses and to increase serum albumin. However, there are now evidences to prescribe a moderately low protein diet (0.8 g per kg per day) plus 1 additional gram of dietary protein for each gram of proteinuria.

DIETARY RECOMMENDATIONS IN NEPHROTIC SYNDROME –

Calories	35 kcal per kg LBW per day
Proteins	0.8 gm per kg LBW per day. + 1gm of dietary protein per gm of
	urinary protein
Fat	< 30% of total calories
Cholesterol	< 200 mgs per day
Sodium	< 2 gms per day

LBW – Ideal Body Weight.

BENEFITS OF REDUCING PROTEINURIA –

- Increases serum albumin levels
- Decreases serum lipid levels
- Retards progression of renal failure and interstitial fibrosis

M.Sc., F& N II Y : Clinical Nutrition and Dietetics 51

Practical Manual II - Dietetics & Diet Therapy

- Decreases tubular exposure to complement factors
- Decreases tubular exposure to iron
- Decreases tubular exposure to oxidized lipids
- Decreases exposure to growth factors that cause maladaptive renal hypertrophy
- Improves edema
- Preserves growth in children.

Note: For Food groups' recommendations, Foods avoided, Foods allowed and principles of diet check NIN manual.

SELF ASSESSMENT QUESTIONS

- 1. Describe the importance of diet for a Nephrotic syndrome patient?
- 2. Mention principles of diet in Nephrotic syndrome patient?
- 3. Plan and prepare a sample diet for a Nephrotic syndrome patient?

REFERENCES:

- 1. Kayser GA et al. Effect of Dietary protein intake on albumin homeostasis in Nephrotic patients. KI 1986 Feb 29 (2), 572 7.
- 2. Walser M, Hill S, Tomalis EA: Treatment of nephritic adults with a supplemented, very low protein diet. Am J Kidney Dis 28: 354-64, 1996.
- 3. Maroni BJ, Staffeld C, Young VR et al: Mechanisms pertaining nephritic patients to achieve nitrogen equilibrium with a protein restricted diet. J Clin Invest 99: 1-9, 1997.
- 4. Yeun YJ, Kaysen GA: Nephrotic Syndrome: Nutritional consequences and Dietary Management. In Mitch WE, Klahr S (Eds): Handbook of Nutrition and Kidney (5th Edition): 160 – 175, 2005.

– – Centre for Distance Education) – – – 52 – – – Acharya Nagarjuna University –

EXPERIMENT - 2.2

ACUTE RENAL FAILURE

INTRODUCTION:

Acute **renal failure means that your kidneys** have suddenly stopped working. Your kidneys remove waste products and help balance water and salt and other minerals (**electrolytes**) in **your blood. When your kidneys stop working, waste products, fluids, and electrolytes** build up in your body. This can cause problems that can be deadly.

A sudden, serious drop in blood flow to the kidneys. Heavy blood loss, an injury, or a bad infection called <u>sepsis</u> can reduce blood flow to the kidneys. Not enough fluid in the body (<u>dehydration</u>) also can harm the kidneys.

Damage from some medicines, poisons, or infections. Most people don't have any kidney problems from taking medicines. But people who have serious, long-term health problems are more likely than other people to have a kidney problem from medicines. Examples of medicines that can sometimes harm the kidneys include:

Antibiotics, such as <u>gentamicin</u> and <u>streptomycin</u>. Pain medicines, such as <u>naproxen</u> and <u>ibuprofen</u>. Some <u>blood pressure</u> medicines, such as ACE inhibitors.

GENERAL INFORMATION:

Name:

Age:

Sex:

Occupation:

Educational status:

Income level:

Vegetarian/Non vegetarian:

Physical activity or inactivity:

ANTHROPOMETRIC MEASUREMENTS:

Height(cm):

Weight(kg):

- M.Sc., F& N II Y : Clinical Nutrition and Dietetics

Practical Manual II - Dietetics & Diet Therapy

Body Mass Index (BMI):

Waist/Hip ratio:

BIOCHEMICAL ANALYSIS:

Mention if any?

PHYSIOLOGICAL ASPECTS:

Blood pressure (mm/Hg):

CLINICAL SYMTOMS:

Identify if any?

Dietary Management –

• Plan according to the phase of ARF.

• Underlying cause – Degree of catabolism "Nutrient requirements in ARF are affected not only ARF but also by the underlying disease and associated complications."

53

• Treatment with Renal replacement therapy (any kind of dialysis) which further adds to the nutritional requirements of the patient.

	Mild	Moderate	Severe
UNA*	>5 g	5-10 g	>10 g
Clinical	Drug	Elective surgery ± infection	Severe injury or
settings	Toxicity		sepsis
Dialysis	Rare	As needed	Frequent
Energy (Kcal	25	25-30	25-35
perkg perday)			
Protein (gms	0.6 – 1.0	1.0-1.2	1.2-1.5
perkg)			
Route	Oral	Enteral and/or Parenteral	Enteral and/or
			Parenteral

Note – Within the allowances of fluid given to the patient it is not possible to meet his total requirements unless the patient is on continuous renal therapies such as CAVD or CVVHD.

For Food groups' recommendations, Foods avoided.

Foods allowed and principles of diet check NIN manual.

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SELF ASSESSMENT QUESTIONS

- 1. Describe the importance of diet for an Acute Renal Failure patient?
- 2. Mention principles of diet in Acute Renal Failure?
- 3. Plan and prepare a sample diet for an Acute Renal Failure patient?

REFERENCES:

- Wilfred Drumlin. Nutritional support in Acute Renal Failure. In Mitch WE, Klahr S (Eds): Handbook of nutrition and Kidney (5th Edition): 95 114, 2005.
- Gupta S, Dash SD. Nutrition in Renal Diseases. In Joshi YK (Ed): Basics of Clinical Nutrition. 191 – 211. 2003.
- Kopple JD: Nutritional Management of Acute Renal Failure. In Kopple JD, Massry SG (Eds): Nutritional Management of Renal Diseases (Second Edition): 379 414, 2004.
- Druml W, Mitch WE. Metabolic abnormalities in Acute Renal Failure. Semin Dial 1996; 9:484 – 490.
- Acharya V. Nutritional requirement in acute renal failure with its management. Journal of Renal Sciences. Vol. 2(3) Oct Dec 1999.

EXPERIMENT - 2.3

CHRONIC RENAL FAILURE

55

INTRODUCTION:

Chronic renal failure, or chronic kidney disease (CKD), is a slow and progressive decline of kidney function. It's usually a result of a complication from another serious medical condition. Unlike acute renal failure, which happens quickly and suddenly, chronic renal failure happens gradually - over a period of weeks, months, or years - as the kidneys slowly stop working, leading to end-stage renal disease (ESRD).

The progression is so slow that symptoms usually don't appear until major damage is done. In the United States, approximately 1 in 1,000 people are getting treated for ESRD, and greater than 19 million adults are living with some type of CKD. In Canada, approximately 1.9 to 2.3 million people suffers from CKD.

The kidneys play three major roles:

removing waste products from the body, keeping toxins from building up in the bloodstream

Producing hormones that control other body functions, such as regulating blood pressure and producing red blood cells

Regulating the levels of minerals or electrolytes (e.g., sodium, calcium, and potassium) and fluid in the body.

GENERAL INFORMATION:

Name:

Age:

Sex:

Occupation:

Educational status:

Income level:

Vegetarian/Non vegetarian:

Physical activity or inactivity:

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ANTHROPOMETRIC MEASUREMENTS:

Height(cm):

Weight(kg):

Body Mass Index (BMI):

Waist/Hip ratio:

BIOCHEMICAL ANALYSIS:

Mention if any?

PHYSIOLOGICAL ASPECTS:

Blood pressure (mm/Hg):

CLINICAL SYMPTOMS:

Identify if any?

DIETARY MODIFICATIONS:

Dialysis

Recommended Nutrient Intake for Adult patients undergoing Maintenance Hemodialysis and those treated with Continuous Ambulatory Peritoneal Dialysis –

56

	MHD	CAPD
Protein ^a	1.0 – 1.2 g per kg per day 50% HBV protein	1.2 – 1.3 g per kg per day 50% HBV protein
Energy ^b	35 kcal per kg per day for < 60 yrs	35 kcal per kg per day for < 60 yrs
	30 kcal per kg per day for > 60 yrs	30 kcal per kg per day for > 60 yrs (including glucose absorption from dialysate) ⁱ
Fat ^c	30% of total calories	30% of total calories
Saturated Fat ^d	< 7% of total calories	< 7% of total calories
Polyunsaturated Fatty acids ^d	Up to 10 % of total calories	Up to 10 % of total calories
Monounsaturated Fatty acids ^d	Up to 20 % of total calories	Up to 20 % of total calories
Carbohydrate ^{c,e}	Rest of the non p	protein calories
Total Fibre intake ^c	20 – 25 g	20 – 25 g
Minerals		
Sodium	750 - 2000 mg per day ^c	2 – 4 g per day ^h
Potassium	70 – 80 mEq per day⁵	100 mEq per day ^h
Phosphorous	800 - 1000 mg per day	800 – 1000 mg per day
	(adjusted for dietary protein need) ^f	(adjusted for dietary protein need) ^f

M.Sc., F& N II Y : Clinical Nutrition and Dietetics	57	Practical Manual II - Dietetics & Diet Therapy
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Calcium	< 2000 mg per day (both from	< 2000 mg per day (both
	diet & phosphate binders) ^f	from diet & phosphate
		binders) ^f
Magnesium ^c	200 – 300 mg per day	200 – 300 mg per day
Iron ^{cg}	Individualized	Individualized
Zinc ^o	15 mgs per day	15 mgs per day
Vitamins	Perday ^c	Per day ^h
Thiamin	1.1 – 1.2 mg per day	1.5 mg per day
Riboflavin	1.1 – 1.3 mg per day	1.8 mg per day
Pantothenic Acid	5 mg per day	10 mg per day
Naicin	14 - 16 mg per day	20 mg per day
Pyridoxin Hcl	10 mg per day	10 mg per day
Vitamin C	75 – 90 mg per day	60 – 100 mg per day
Folic Acid	1– 10 mg per day	> 1 mg per day
Vitamin A	None	None
Vitamin D'	Individualized	Individualized
Total Fluids	24 hr urine output + 500 ml	24 hr urine output + 24 hr
		extra drain + 500 ml

It should be primarily complex carbohydrates.

Iron requirements vary according to the dose of administered erythropoietin.

Vitamin D supplementation depends upon the serum levels of calcium, phosphorous and PTH.

60% - 80% of the dialysate dextrose can be absorbed in a day. The total calories absorbed from the dialysate can be calculated using the following formula proposed by Grodstein et al (i).

Dextrose absorbed Yg = $11.3 \times x - 10.9$ where x is the concentration of the dextrose used.

Total calories absorbed = $Y \times L$ (Dialysate) $\times 3.7$, where L is the litres of dialysate.

Note: For Food group's recommendations, Foods avoided,

Foods allowed and principles of diet check NIN manual.

SELF ASSESSMENT QUESTIONS

- 1. Describe the importance of diet for a Chronic Renal Failure patient?
- 2. Mention principles of diet in Chronic Renal Failure?
- 3. Plan and prepare a sample diet for a Chronic Renal Failure patient?

REFERENCES :

National Kidney Foundation. K/DOQI Clinical Practice Guidelines for Nutrition in Chronic Kidney Disease American Journal of Kidney Diseases, Vol 35, No 6, Suppl 2 (June), 2000: pp S1-S140.

Kopple JD, Massry SG (Eds): Nutritional Management of Renal Diseases (5th Edition): 2005.

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Executive summary of the Third report of the National Cholesterol Education program (NCEP) Expert panel on Detection, Evaluation and treatment of High Blood Cholesterol in Adults (Adult Treatment panel III). JAMA 2001; 285: 2486 – 2497.

National Kidney Foundation. K/DOQL Clinical Practice Guidelines for Bone Metabolism and Disease in Chronic Kidney Disease. Am J Kidney Dis 42:S1-S202, 2003 (suppl 3).

Mitch WE, Klahr S (Eds): Handbook of Nutrition and Kidney (5th Edition): 2005.

Grodstein GP, Blumenkrantz MJ, Kopple JD, Moran JK, Coburn JW. Glucose absorption during continuous ambulatory peritoneal dialysis. KL 1981 April 19(4):564-7.

EXPERIMENT -2.4

RENAL CALCULI

59

INTRODUCTION:

Kidney Stones are also termed as **Renal Calculi.** (Nephrolithiasis) A kidney stone is a hard, crystalline material formed within the kidney or urinary tract. **Renal stone disease** is common, with a worldwide prevalence of between 2 and 20%. Lifetime prevalence is nearly 10% in men and 5% in women. Approximately 50 percent of patients with previous urinary calculi have a recurrence within 10 years. Dietary risk factors associated with increased stone risk.

Low fluid intake, High intake of animal protein, High dietary sodium, Excessive intake of refined sugars, Foods rich in oxalate, High intake of grapefruit juice, apple juice and soft cola drinks. Family history of kidney stones (increase risk by three times) History of hypertension, Obesity, Various other medical conditions. Calcium oxalate (alone or in combination) is the most common type **of urinary stone**.

OBJECTIVE:

- To maintain fluid balance.
- To maintain vegetarian diets in order to regulate the GFR.
- To maintain sodium intake.

GENERAL INFORMATION:

Name:

Age:

Sex:

Occupation:

Educational status:

Income level:

Vegetarian/Non vegetarian:

Physical activity or inactivity:

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ANTHROPOMETRIC MEASUREMENTS:

Height(cm):

Weight(kg):

Body Mass Index (BMI):

Waist/Hip ratio:

BIOCHEMICAL ANALYSIS:

Mention if any?

PHYSIOLOGICAL ASPECTS:

Blood pressure (mm/Hg):

CLINICAL SYMTOMS:

Identify if any?

DIETARY MANAGEMENT:

Diets for managing calcium kidney stones have adequate nutrients for most healthy adults. However, the Recommended Dietary Allowance (RDA) for calcium may not be met in postmenopausal, pregnant, or breast-feeding women; or in people under 25 years of age. Calcium supplements are generally not recommended, unless approved by a physician.

Diets for managing calcium kidney stones have adequate nutrients for most healthy adults. However, the Recommended Dietary Allowance (RDA) for calcium may not be met in postmenopausal, pregnant, or breast-feeding women; or in people under 25 years of age.

REDUCED INTAKE OF ANIMAL PROTEIN AND SODIUM:

High dietary intake of animal protein increases the risk of kidney stones. Compared with individuals eating 50 grams or less of animal protein per day, those eating the most (77 grams or more) have a 33 percent higher risk for stones. Compared with a standard (low–calcium) diet used for prevention of calcium stone formation, a diet restricted in animal protein and sodium reduces the risk for stone recurrence by half.

LIMITING OXALATES:

Oxalate-rich foods may contribute to the formation of kidney stones. Patients may benefit from avoiding foods high in oxalate, including rhubarb, spinach, strawberries, chocolate (especially

dark), wheat bran, nuts, beets, and tea. Alternatively, certain food preparation methods may be used to reduce oxalate content. Boiling, for example, reduces oxalate content by as much as 80 percent.

CALCIUM AT MEALTIME:

Interestingly, calcium intake from foods lowers the risk for calcium stones, presumably because calcium decreases the absorption of oxalates. Individuals consuming the greatest amount of calcium from foods have about a 30 percent lower risk for stone formation, compared with persons consuming the lowest amounts. In contrast to calcium consumed at mealtime, calcium from supplements taken between meals may have a very different effect and may be associated with an increased risk of stones.

LIMITING COLAS, COFFEE, AND TEA:

Although further research is required, evidence indicates that cola consumption significantly increases the risk for stones. Individuals who avoid colas have been found to have a 15 percent lower rate of stone recurrence than those who continue to consume these beverages. Coffee and tea may also be associated with an increased risk.

OVERALL FLUID INTAKE APPEARS TO BE MOST IMPORTANT:

Individuals who consume the highest amount of fluids each day (about 2.6 liters) have a 30 to 40 percent lower risk for stone formation than those consuming the least (about 1.4 liters).

VEGETARIAN DIETS:

Nationwide surveys have determined that the risk for stone formation is 40 to 60 percent lower in individuals following vegetarian diets. Vegetarian diets may lower the risk for kidney stones in a number of ways. These include the absence of animal protein and higher intakes of magnesium and potassium, both of which are associated with lower risk for stone formation. Vegetarian diets also provide ample amounts of whole grains high in phytic acid, a chemical in plants that is associated with a 40 percent lower risk for stone formation in persons eating the most (about 900 milligrams/ day), compared with those eating the least amount (about 600 milligrams/day).

SUGGESTED RECOMMENDATION:

We've made a lot of advances in our medical treatment of kidney stones. But ideally, you don't ever want to have a kidney stone — or worse, have more than one.

Here are some ways to lower your risk.

KEEP URINE DILUTE:

Drink at least 2 liters of water per day. Small amounts of coffee, tea, lemon water, and alcohol may also be helpful.



GET RID OF THE EXCESS:

If it doesn't use stuff, our body has to excrete anything that we ingest. Overeating, overdrinking, and overmedicating can lead to more work for the kidneys. Big meals, yo-yo dieting, and binging put big demands on the kidneys and can promote stone formation. Avoid big meals before bed. (You'll sleep better that way anyway.)

VEGETABLES INTAKE:

If you rely on oxalate-rich foods year round, your kidneys might get overwhelmed. Eat a variety of foods, and eat with the seasons to give your kidneys a break. The food will be fresher, too. Bonus!

LIMIT ANIMAL PROTEIN:

If you're at risk, consider lowering your animal protein intake to no more than about 50 grams per day. Make up the rest from plant sources as much as possible.

LIMIT SODIUM INTAKE:

Less than 100 mmol/day (2300 mg/day). This is easy if you don't eat processed foods.

STAY LEAN:

Less body fat turnover means fewer waste products for the kidney to deal with.

CONTROL CALCIUM:

No more than 800-1000 mg/day of calcium (food and supplements combined). With calcium, you don't want to go too high or too low.

USE VITAMIN SUPPLEMENTATION WITH CAUTION:

Vitamins A and D can lead to increased calcium in the urine and stone formation. Only supplement with vitamin D if you require it (based on blood testing), watch out for fortified foods.

Vitamin C supplements can be excreted in the urine as oxalate. Avoid using them unless you're deficient. This includes fortified foods/

Note: For Food group's recommendations, Foods avoided Foods allowed and principles of diet check NIN manual.

SELF ASSESSMENT QUESTIONS

- 1. Describe the importance of diet for a Renal calculi patient?
- 2. Mention principles of diet in Renal calculi?
- 3. Plan and prepare a sample diet for a Renal calculi patient?

M.Sc., F& N II Y : Clinical Nutrition and Dietetics	Ж	63	\sum	Practical Manual II - Dietetics & Diet Therapy
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REFERENCES:

Taylor EN, et al. DASH-Style diet and 24-hour urine composition. Clin J Am Soc Nephrol 2010 Sep 16 [Epub ahead of print].

Dwyer JT. Health aspects of vegetarian diets. Am J Clin Nutr 1988;48(3 Suppl):712-738.

Patel AM & Goldfarb S. Got calcium? Welcome to the calcium-alkali syndrome. J Am Sco Nephrol 2010;21:1440-1443.

Rodman JS, Sosa RE, Seidman C, Jones R. No More Kidney Stones. 2007. John Wiley & Sons Inc.

Charrier MJ, Savage GP, Vanhanen L. Oxalate content and calcium binding capacity of tea and herbal teas. Asia Pac J Clin Nutr 2002;11:298-301.

Grases F, et al. Phytate acts as an inhibitor in formation of renal calculi. Front Biosci 2007;12:2580-2587.

	64	Acharya Nagarjuna University)
EXPERIMENT-3			

CANCER

INTRODUCTION:

Cancer is a complex collection of distinct genetic diseases united by common hallmarks. Here, we expand upon the classic hallmarks to include the stress phenotypes of tumorigenesis. We describe a conceptual framework of how oncogene and non-oncogene addictions contribute to these hallmarks and how they can be exploited through stress sensitization and stress overload to selectively kill cancer cells. In particular, we present evidence for a large class of non-oncogenes that are essential for cancer cell survival and present attractive drug targets. Finally, we discuss the path ahead to therapeutic discovery and provide theoretical considerations for combining orthogonal cancer therapies.

Cancer is a general term used to refer to a condition where the body's cells begin to grow and reproduce in an uncontrollable way. These cells can then invade and destroy healthy tissue, including organs. Cancer sometimes begins in one part of the body before spreading to other parts.

Cancer harms the body when damaged cells divide uncontrollably to form lumps or masses of tissue called tumors (except in the case of leukemia where cancer prohibits normal blood function by abnormal cell division in the blood stream). Tumors can grow and interfere with the digestive, nervous, and circulatory systems and they can release hormones that alter body function. Tumors that stay in one spot and demonstrate limited growth are generally considered to be benign.

OBJECTIVE:

- To prevent or reverse nutrient deficiencies.
- To preserve lean body mass.
- To help patients better tolerate treatments.
- To minimize nutrition-related side effects and complications.
- To maintain strength and energy.
- To protect immune function, decreasing the risk of infection.
- To aid in recovery and healing.
- To maximize quality of life.

GENERAL INFORMATION:

Name:

-(M.Sc., F& N II Y : Clinical Nutrition and Dietetics	Ж	65	Practical Manual II - Dietetics & Diet Therapy
A	ge:			

Sex:

Occupation:

Educational status:

Income level:

Vegetarian/Non vegetarian:

Physical activity or inactivity:

ANTHROPOMETRIC MEASUREMENTS:

Height(cm):

Weight(kg):

Body Mass Index (BMI):

Waist/Hip ratio:

BIOCHEMICAL ANALYSIS:

Mention if any?

PHYSIOLOGICAL ASPECTS:

Blood pressure (mm/Hg):

CLINICAL SYMPTOMS:

Identify if any?

DIETARY ASSESSMENT:

NUTRITION GUIDELINES –

Centre for Distance Education)66	Acharya Nagarjuna University)
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Key aspects of the nutrition care process include identification of malnutrition, establishing the goals of treatment, determining the nutrition prescription and implementing the nutrition care.

IDENTIFYING MALNUTRITION –

Nutrition assessment can be used to determine the nutritional status of patients at diagnosis and at regular intervals during cancer treatment. Subjective Global Assessment (PG-SGA) is a comprehensive method of nutrition assessment specifically developed for use in the cancer population.

NUTRITION TREATMENT GOALS -

Several studies have demonstrated that patients with cancer who stabilized their weight had longer survival and improved quality of life compared with those who continued to lose weight.

NUTRITION IMPLEMENTATION -

Nutrition implementation involves counseling the patient and / or careers to maximize food intake and facilitate optimal symptom control.

NUTRITION PRESCRIPTION -

Energy expenditure of patients with cancer vary greatly. Treatment and disease stage may alter metabolic requirements over time.

ENERGY

- Normometabolic patients: 25-30 Kcals per Kg per day
- Hypermetabolic or weight gain desired: 30-35 kcals per kg per day
- Obese patients: 21-25 kcals per kg per day (when weight maintenance is the goal, energy need may be increased when nutritional status is deteriorating)
- More than 35 kcal per kg per day may be required to maintain or promote weight gain in some situations like bone marrow transplantation.

PROTEIN

- Nonstressed: 1 1.5 g per kg per day
- Hypermetabolism or protein losing conditions: 1.5-2.5 g per kg per day

-(M.Sc., F& N II Y : Clinical Nutrition and Dietetics) <	67	Practical Manual II - Dietetics & Diet Therapy)	
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FAT

• 20-30% of total energy

ELCOSAPENTAENOIC ACID

Many studies have indicated that eicosapentaenoic acid (EPA), an omega-3 polyunsaturated fat supplementation reduces production of pro-inflammatory cytokines such as interleukin-6, interleukin-1 and tumour necrosis factor, and in cultured cancer cell lines increases cell death rate.

MICRONUTRIENTS

• Deficiencies of vitamins and minerals can occur as a result of disease and side effects of treatment. Use of a daily multivitamin/mineral supplement with levels not exceeding one to two times the RDI values may be beneficial.

FLUID

 30 – 35 ml per kg per day i.e similar to other patient population without renal disease. Fluid needs may also be greater in increased fluid losses and dehydration as a result of vomiting, diarrhea.

Note: For Food groups' recommendations, Foods avoided, Foods allowed and principles of diet check NIN manual.

SELF ASSESSMENT QUESTIONS

- 1. Describe the importance of diet for a Cancer patient?
- 2. Mention principles of diet in Cancer?
- 3. Plan and prepare a sample diet for a Cancer patient?

REFERENCES:

- 1. National Cancer Institute, U.S National Institute of Health 2010
- 2. The A.S.P.E.N. Nutrition Support Care Curriculum.
- 3. Mary Marian, Susan Roberts, Clinical Nutrition for oncology patients. Jones and Bartlett India Pvt. Ltd. 2010.
- 4. www.cancer.gov
- 5. www.nci.nih.gov/cancertopics/eatinghints.

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EXPERIMENT - 4

DIABETES MELLITUS

INTRODUCTION:

Diabetes is the common term for several metabolic disorders in which the body no longer produces insulin or uses the insulin it produces ineffectively. Insulin is a hormone that is needed to convert sugar, starches and other food into energy needed for daily life. The cause of diabetes continues to be a mystery, although both genetics and environmental factors such as obesity and lack of exercise appear to play roles. It is a common condition and is characterized by abnormally high blood sugar levels.

The goals in caring for patients with diabetes mellitus are to eliminate symptoms and to prevent, or at least slow, the development of complications. Micro vascular (i.e., eye and kidney disease) risk reduction is accomplished through control of glycemia and blood pressure; macro vascular (i.e., coronary, cerebra vascular, peripheral vascular) risk reduction, through control of lipids and hypertension, smoking cessation, and aspirin therapy; and metabolic and neurologic risk reduction, through control of glycemic.

OBJECTIVE:

- To provide adequate calories for weight maintenance with optimum Nutrition for good health.
- To provide relief from symptoms.
- To maintain glycemic control.
- To achieve /maintain healthy and productive life.

GENERAL INFORMATION:

Name:

Age:

Sex:

Occupation:

Educational status:

Income level:

- M.Sc., F& N II Y : Clinical Nutrition and Dietetics 69 - Practical Manual II - Dietetics & Diet Therapy

Vegetarian/Non vegetarian:

Physical activity or inactivity:

ANTHROPOMETRIC MEASUREMENTS:

Height(cm):

Weight(kg):

Body Mass Index (BMI):

Waist/Hip ratio:

BIOCHEMICAL ANALYSIS:

Fasting blood Glucose:

Post prandial Blood Glucose:

GTT:

OGTT:

HbA1_c:

LIPID PROFILE:

HDL-C:

LDL-C:

VLDL-C:

Continues monitoring of Glucose levels:

PHYSIOLOGICAL ASSESSMENT:

Blood pressure (mm/Hg):



CLINICAL SYMPTOMS:

Identify if any?

DIETARY ASSESSMENT:

Condition: Type 2 diabetes

- Sedentary activity, ideal weight -25 calories per kg
- Moderate activity ,ideal weight -30 calories per kg
- Sedentary activity, overweight -20 calories per kg

Not less than 1200 kcal per day - female

Not less than 1400 to 1600 kcal per day -male

REF: ADA-2008

Macro nutrients in diabetes mellitus:

Current nutrition recommendations advise individualization based on treatment goals, physiologic parameters and medication usage.

Individualization of the macronutrient composition will depend on the metabolic status of the patient (e.g., lipid profile, renal function) and/or food preferences, insulin dosage and action.

Carbohydrates

Sugar can be <10% of TEI - 45 to 60% Total Energy Intake (TEI)

Dietary fiber

Soluble fiber - 14g per 1000 calories; Maximum 50 g daily 10-25 g daily

Protein -10-35 % TEI

Fats - 25 to 35% TEI

- M.Sc., F& N II Y : Clinical Nutrition and Dietetics 71 - Practical Manual II - Dietetics & Diet Therapy
SFA - Less than 7%
MUFA -greater than or equal to10%
PUFA -Less than 10%
Tran's fats – Nil
PUFA: MUFA: SFA -1:2:0.8
Sodium - Less than 2300mg

Food exchange list:

1 Cup=200ml, 1 teaspoon=5ml

Cereal Exchanges -

1 exchange = 18-21 g carbohydrate, 1-3 g protein, 85 calories

ltem	Raw wt (g)	Approx Cooked wt (g)	Household measure (cooked)
Rice	25 (2 tbsps)	75	½ cup
Rice flour	25 (2 tbsps)	-	-
Idli	-	50	1 medium
Dosa	-	50	1 small
Wheat flour	25 (3 ½ tbsps)	-	-
Chapathi	-	25	1 medium
Sooji	25 (2 tbsps)	75	½ cup
Ragi flour	25 (3 ½ tbsps)	75	½ cup
Bread	-	25	2 slices

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Oats	25 (3 ½ tbsps)	75	% сир
Cornflakes	25 (5 tbsps)	-	½ cup
Vermicelli	25 (2 ½ tbsps)	75	½ cup
Sago	25	75	½ cup
Noodles	25	75	½ cup
Rice, puffed/flakes	-	1 cup	
Potato	100	-	½ cup
Yam	75	-	¼ cup
Sweet potato	75	-	¼ cup
Colocasia	100	-	½ cup
Таріоса	50	-	¼ cup

Milk Exchanges –

1 exchange = 4 g carbohydrate, 1-3 g protein, 4 g fat, 65 calories {* fat negligible}

ltem	Amount	Household measure
Whole milk, cow's	100 ml	½ cup
Curd	100 ml	½ cup
*Skimmed milk	200 ml	1 cup
Whole milk powder	13 gms	3 tsps
*Skimmed milk powder	18 gms	5 tsps
Buffalo's milk	50 ml	¼ cup
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Meat / Cheese Exchanges -

1 exchange = 85 calories, protein 7.5-18 g & fat 6 g (CHO, fat & protein vary widely)

73

ltem	Amount
Chicken	75 gms
Fish	75-100 gms
Egg	1 medium
Meat	50 gms
Paneer (cottage cheese)	35 gms (3 tbsp)
Beef / Pork	75 gms

Pulse Exchanges –

1 exchange = 15 g carbohydrate, 6 g protein, fat negligible

ltem	Amount	Household measure
All pulses & legumes	25 gms	½ cup cooked
Dals	25 gms	¾ cup cooked

Fruit Exchanges –

1 exchange = 40 calories, 10 gms carbohydrates

ltem	Amount
Amla	4-5
Apple	1 small
Apricot	2 fresh
Banana	½ small
Custard apple	1 small
Dates	2
Grapes	20
Guava	1 medium size

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Grapefruit	½ small
Jackfruit	3 pcs
Jambu	10 small
Mango	1 small
Melon	1 slice
Orange	1 average
Papaya, ripe	2" × 3" slice
Peach	1 medium
Pear	1 small
Plum	2
Pineapple	1 slice
Sapota	1 small
Sweet lime	1 medium size
Strawberries	1 cup
Watermelon	1 slice (200g)

Vegetable Exchanges –

GROUP A 30 cals per 100 gms 1 exchange = 100 gms or ½ cup cooked cooked CHO upto 6-12%, Protein 2-3 gms GROUP B 50 TO 60 cals per 100 gms 1 exchange = 100 gms or ½ cup CHO upto 6%

Cabbage	Agathi
Celery, Lettuce	Beetroot
Chow chow	Carrot
Brinjal	Drumstick Leaves
Cauliflower	Turnip, Coriander Leaves

M.Sc., F& N II Y : Clinical Nutrition and Dietetics 75	Practical Manual II - Dietetics & Diet Therapy
Mint	Onion Big, Mango ginger
Spinach	Field beans
White radish	Pink radish
Plantain stems	Gogu
Leafy greens – Fenugreek, Amaranth, etc	Jackfruit tender
Cucumber	Sword, Broad, Cluster & Double beans
Capsicum	
Drumstick	
French beans	
Green papaya	
Knol khol	
Ladies finger	
Mushroom	
Tomato	
Pumpkin	
Gourds-Ridge, Snake, Ash & Bitter gourd	

Fat Exchanges –

1 exchange = fat 10 g, protein nil, CHO nil

ltem	Amount	Household measure
Oil – any variety	10 g	3 tspn
Ghee/Vanaspathi	10 g	2 tspn
Butter	10 g	2 ½ tspn
Margarine	10 g	

 Centre for Distance Education	<	76		Acharya Nagarjuna University	⊢−-
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Note: For Food groups recommendations Food avoided,

Foods allowed and principles of diet check NIN manual.

SELF ASSESSMENT QUESTIONS

1. Describe the importance of diet for a Diabetic patient?

2. Mention principles of diet in Diabetes?

3. Plan and prepare a sample diet for a Diabetic patient?

REFERENCES:

Krause's Food & Nutrition therapy 12e 2008

NIN, RDA, 2010

NIN, DIET AND DIABETES, EDITED 1993 REPRINTED 2008

HANDBOOK OF DIABETES, V.SESHIAH, 4e 2009

ADA 2008 and 2011.

EXPERIMENT - 5

TYPHOID FEVER

77

INTRODUCTION:

Typhoid fever is an infectious disease caused by salmonella typhosa and is usually transmitted by drinking water or milk contaminated with intestinal contents or carriers. Improved hygiene and prophylactic public health measures have greatly reduced the incidence. The length of convalescence depends to a great extent on nutritional therapy. The symptoms include severe headache, high temperature, acute stomach pain, diarrhea, and patches are found. The intestine is inflamed.

The body glycogen store is rapidly depleted and energy need is increased. Metabolic rate is increased by 40-50 per cent above the normal. Tissues protein breakdown is about ½ to ¾ pounds of muscle per day. Nitrogen catabolism is three times above the normal.

OBJECTIVE:

- To maintain health and hygiene conditions through healthy food habits.
- To maintain fluid balance and to consume excess amount of water to flush out toxins.
- To regulate mineral balance through planned diets.
- To maintain good digestive system through soft and bland diets.

GENERAL INFORMATION:

Name:

Age:

Sex:

Occupation:

Educational status:

Income level:

Physical activity or inactivity:

Centre for Distance Education	n)<	78	+	Acharya Nagarjuna University)
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ANTHROPOMETRIC MEASUREMENTS:

Height(cm):

Weight(kg):

Body Mass Index (BMI):

Waist/Hip ratio:

BIOCHEMICAL ANALYSIS:

If any mention?

PHYSIOLOGICAL ASPECTS:

Blood pressure (mm/Hg):

CLINICAL SYMTOMS:

Identify if any?

DIETARY ASSESSMENT:

DIETARY MODIFICATION:

A bland non-irritating diet, low in fiber content, should be given to prevent intestinal irritation. If diarrhea is not present milk can be used on the basis of the diet. High fluid content is essential. About 3,500 kcals, 100 gms of protein, and 3,000 ml of fluid is recommended during the febrile period.

FOODS ALLOWED

Milk and barley water and glucose, fruit juices with glucose, strained vegetable juices, milk puddings, cereal gruels, baked fish or minced meat, vegetable purees and thin dal curries are permitted.

A soft or fluid diet is suggested. Small feedings in more intervals are better. All irritating fibres, highly flavoured and spiced food items are harmful since the intestinal tract is inflamed.

-	M.Sc., F& N II Y : Clinical Nutrition and Dietetics	К	79	\rightarrow (Practical Manual II - Dietetics & Diet Therapy
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DIET FOR TYPHOID

The main aim of a special diet for typhoid fever is to ensure that you receive proper nutrition, to balance the levels of fluids and electrolytes in the body and to supply the body with sufficient protein. It is important to ensure a good intake of the following nutrients:

- Energy The basal metabolic rate reduces when there is a fever and hence the caloric requirement must be high. The illness also causes some amount of restlessness and this leads to greater expenditure of energy. In the early stages of the illness, the individual will be able to consume only about 600 to 1200kcal per day. This intake should increase as soon as possible.
- Protein A high protein diet is necessary for recovery from typhoid fever. Approximately 100gm of
 protein per day is recommended for adults. Protein can be obtained from foods such as eggs and
 milk.

The body glycogen store is rapidly depleted and energy need is increased. Metabolic rate is increased by 40-50 per cent above the normal. Tissues protein breakdown is about ½ to ¾ pounds of muscle per day. Nitrogen catabolism is three times above the normal.

- **Carbohydrates** A healthy intake of carbohydrates is a must to meet the body's energy requirements. It is advisable to consume those food sources of carbohydrates that are easily digestible. Consume well cooked foods that are not high in sugar.
- **Fiber** Typhoid leads to damage of the digestive tract and hence any foods that cause irritation should be avoided. Fiber can be harsh on the digestive system and hence it is better to follow a low-fiber diet.
- **Fats** A moderate intake of fat is necessary for a steady supply of energy. However, it would be necessary to restrict fat consumption if there is diarrhea.
- **Minerals** Due to fever and sweating, there is an increased loss of electrolytes such as potassium and sodium. Consume fruit juices, soups and broths to compensate for the mineral loss.
- Vitamins The need for vitamins increases during infection and illness.
- Fluids Ensure a good intake of fluids to make up for the loss of hydration. Fluid intake is also necessary to encourage elimination of waste material and toxins through the urine. Electrolytes, especially sodium chloride, have to be supplemented. Salty juices and soups can meet this demand. Even though potassium is abundantly present in most of the food items, limited food intake restricts its availability and so in prolonged fever it has to be supplemented. Fruits juices and milk beverages can contribute considerable quantities.

	Centre for Distance Education) — — — — 80 — — — Acharya Nagarjuna University —	
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Note: For Food group's recommendations, Foods avoided,

Foods allowed and principles of diet check NIN manual.

SUGGESTIONS FOR TYPHOID:

The following measures aid in recovery from typhoid and also help in preventing a spread of the infection:

- Maintain good hygiene in order to prevent a spread of typhoid. Wash your hands frequently with hot water and soap especially before eating and after going to the bathroom.
- Keep the toilets, water faucets, telephone receivers and door handles clean at all times.
- If you have typhoid, avoid handling food as this can cause the disease to spread. Wait for your doctor's consent before preparing food for others.
- Keep your personal items such as towels and utensils separate. Also wash them regularly with hot water and soap. Clothes, towels or bed linen that is heavily soiled should first be soaked in disinfectant for a sometime before being washed.

SELF ASSESSMENT QUESTIONS

- 1. Describe the importance of diet for a Typhoid Fever patient?
- 2. Mention principles of diet in Typhoid Fever?
- 3. Plan and prepare a sample diet for a Typhoid Fever patient?

REFERENCES:

 Silvia Michanie, Frank L. Bryan, Persia Alvarez, Aria Barros Olivo, Aurelio Paniagua, Critical control points for foods prepared in households whose members had either alleged typhoid fever or diarrhea, International Journal of Food Microbiology, Volume 7, Issue 2, October 1988, Pages 123-134, ISSN 0168-1605, 10.1016/0168-1605(88)90005-0.

EXPERIMENT - 5.1

MALARIAL FEVER

81

INTRODUCTION:

Malaria is caused by a parasite that is passed from one human to another by the bite of infected *Anopheles* mosquitoes. After infection, the parasites (called sporozoites) travel through the bloodstream to the liver, where they mature and release another form, the merozoites. The parasites enter the bloodstream and infect red blood cells.

The parasites multiply inside the red blood cells, which then break open within 48to 72 hours, infecting more red blood cells. The first symptoms usually occur 10 days to 4 weeks after infection, though they can appear as early as 8 days or as long as a year after infection. The symptoms occur in cycles of 48 to 72 hours.

Most symptoms are caused by:

1. The release of merozoites into the bloodstream.

2.<u>Anemia</u> resulting from the destruction of the red blood cells.

3.Large amounts of free <u>hemoglobin</u> being released into circulation after red blood cells break open.

OBJECTIVE:

- To maintain fluid balance.
- To maintain balanced diets.
- To protect immune function, decreasing the risk of infections.

GENERAL INFORMATION:

Name:

Age:

Sex:

Occupation:



Income level

ANTHROPOMETRIC MEASUREMENTS:

Height (cm):

Weight (kg):

Body Mass Index (BMI):

Waist/Hip ratio:

BIOCHEMICAL ANALYSIS:

Mention if any?

Lipid profile:

PHYSIOLOGICAL ASPECTS:

Blood pressure (mm/Hg):

CLINICAL SYMPTOMS:

Identify if any?

DIETARY MODIFICATION:

Depending on the degree of fever, initially for 2-3 days, the person should be put on a liquid diet. First two days, he should be on a clear liquid diet, free of milk. For eg: orange juice, lime water, barley water etc. Following that he can move on to a milk based liquid diet, like tea, coffee, porridge, fruit milkshakes etc.

After this a light bland diet can be started. Mashed kichdi, daliya, boiled potato etc can be given. These are high energy foods and the person will need it for quick recuperation. If the person tolerates the light diet well, then he can be put on a fully solid diet.

M.Sc., F&NIIY: Clinical Nutrition and Dietetics 83 - Practical Manual II - Dietetics & Diet Therapy

The solid foods should be from all the food groups. Preferably whole cereals and grains, nuts and seeds, lot of vegetables and dairy products. Jaggery can be included as a source of iron and as a sweetener instead of sugar.

FOODS AVOIDED:

Beverages like strong tea/coffee

Refined flours, bakery products, sugars

Accompaniments like pickles, papads, and sauces

Deep fried oily snacks

Alcoholic beverages/ tobacco

Meat products.

PRINCIPLES OF DIET:

Diet is of utmost importance in the treatment of malaria. The patient should fast on orange juice and water for seven to fifteen days depending on the severity of the fever.

The warm water enema should be administered daily during this period to cleanse the bowels. After the fever has subsided, an exclusive fresh fruit diet for further three days. In this regimen, he should take three meals a day, at five-hourly intervals, of fresh, juicy fruits, like oranges, grapes, grapefruit, apple, pineapple, mango and papaya. Milk may be added to the fruit-diet after this period and this diet may be continued for a further few days.

Thereafter, the patient may gradually embark upon a well-balanced diet of natural foods consisting of seeds, nuts and grains. Vegetables and fruits, with emphasis on fresh fruits and raw vegetables.

The patient should avoid strong tea, coffee, refined and processed foods, fried foods, condiments, sauces, pickles, white sugar, white flour, and al products made from them. He should also avoid al meats, alcoholic drinks and smoking.

The best way to reduce temperature naturally, during the course of fever, is by means of the cold pack, which can be applied to the whole body.

Centre for Distance Education 84 Acharya Nagarjuna University)
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This pack is made by wringing out a sheet or other large square piece of linen material in cold water, wrapping it right round the body and legs of the patient (twice round would be best) and then covering completely with a small blanket or similar warm material. This pack should be applied every three hours during the day while temperature is high and kept on for an hour or so. Hot-water bottles may be applied to the feet and also against the sides of the body.

Note: For Food group's recommendations, Foods avoided,

Foods allowed and principles of diet check NIN manual.

SELF ASSESSMENT QUESTIONS

- 1. Describe the importance of diet for a Malarial Fever patient?
- 2. Mention principles of diet in Malarial Fever?
- 3. Plan and prepare a sample diet for a Malarial Fever patient?

REFERENCES:

- 1. www.unicef.org.
- 2." Malaria key facts", World Health Organization. Accessed on October 10th, 2013.
- 3."<u>About Malaria</u>", Centers for Disease Control and Prevention. Accessed on October 10th, 2013.
- 4. "Malaria", National Library of Medicine. Accessed on October 10th, 2013.

EXPERIMENT - 5.2

TUBERCULOSIS

85

INTRODUCTION:

Tuberculosis, commonly known as TB, is a bacterial infection that can spread through the lymph nodes and bloodstream to any organ in your body. It is most often found in the lungs. Most people who are exposed to TB never develop symptoms because the bacteria can live in an inactive form in the body. But if the immune system weakens, such as in people with <u>HIV</u> or elderly adults, TB bacteria can become active. In their active state, TB bacteria cause death of tissue in the organs they infect. Active TB disease can be fatal if left untreated.

Tuberculosis is an infectious disease caused by the bacillus mycro bacterium tuberculosis. Usually lungs, lymph nodes and kidneys are affected. Alimentary track, lymph nodes of the neck, liver, spleen and bones and joints of children are more affected compared to adults. Tuberculosis is a highly communicable disease. Congested dwelling and unhygienic living spread this infection. It takes years to manifest the symptoms after the initial attack. Pulmonary tuberculosis is more common. Pulmonary tuberculosis is an inflammatory disease of the lung.

Wasting of tissues, exhaustion, persistent cough, expectoration and fever are the initial symptoms. Cough which persists for more than two weeks is the warning symptom. Loss of weight, pain in the chest, poor appetite, fatigue and blood-sputum accompany the other symptoms. The chronic phase of the disease is accompanied by low-grade fever. The most important factor of treatment is complete rest along with drugs and diet. Antibodies are used as drugs.

OBJECTIVE:

- To maintain fluid balance
- To maintain immune system
- To maintain health and hygiene conditions through diet.

GENERAL INFORMATION:

Name:

Age:

Sex:

Occupation:



Income level:

Physical activity or inactivity:

ANTHROPOMETRIC MEASUREMENTS:

Height(cm):

Weight(kg):

Body Mass Index (BMI):

Waist/Hip ratio:

BIOCHEMICAL ANALYSIS:

If any mention?

PHYSIOLOGICAL ASPECTS:

Blood pressure (mm/Hg):

CLINICAL SYMPTOMS:

Identify if any?

DIETARY ASSESSMENT:

DIETARY MODIFICATION:

A high calorie, high protein, high vitaminised and mineralized, high fluid soft diet is recommended. Easily digestible, good quality diet reduces strain on the body. Diet plays a key role in the treatment of tuberculosis.

About 500 kcals are required more during the illness. Good quality proteins of 75-80 gms help quick regeneration of serum albumin. Calcium is essential to promote healing of the tuberculous lesions. Iron is also required in high amount to increase the blood volume. Calcium, iron and phosphorus along with other minerals help the overall regeneration of cells, blood and fluids.

M.Sc., F& N II Y : Clinical Nutrition and Dietetics	К	87	-	Practical Manual II - Dietetics & Diet Therapy
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Vitamin supplements are also essential. Carotenoids are not converted to vitamin A very effectively. Vitamin C is also essential for many regenerative purposes. Prolonged administration of chemotherapeutic agents in tuberculosis manifest antagonistic effect on certain B vitamins, especially on B6 folate. Inter-conversion of glycine and serine are also affected. Peripheral neuritis, characteristic of B6 deficiency, is common among tuberculosis patients. Supplements of these vitamins are essential.

Since most patients have very poor appetite small feedings with more intervals are recommended. Attractive, appetizing meals induce appetite.

Milk and egg-based diet is better for a tuberculosis patient. Money cannot be considered as a criteria in the treatment. Liberal intake of citrus fruits and leafy vegetables and protective foods are essential in the dietary of a tuberculosis patient.

Note: For Food group's recommendations, Foods avoided, Foods allowed and principles of diet check NIN manual.

SELF ASSESSMENT QUESTIONS

- 1. Describe the importance of diet for a Tuberculosis patient?
- 2. Mention principles of diet in Tuberculosis?
- 3. Plan and prepare a sample diet for a Tuberculosis patient?

REFERENCES:

- 1. Newsletter: Mayo Clinic Health Letter.
- 2. Book: Mayo Clinic Family Health Book, 4th Edition.
- 3. Raheena begum, A text book of Foods, Nutrition and Dietetics.