



**Internship Report
On**

**Dietary Modification of Several Types Noncommunicable Diseases in
Ahsania Mission Cancer and General Hospital**

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LETTER OF TRANSMITTAL

5th May, 2021
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Subject: Submission of internship report

Dear Sir,

It is a great pleasure and respect for me to have the opportunity to submit my intern report works on Dietary modification of several types non-communicable diseases.

I have Prepared this report based on the acquired experience and valued knowledge during my intern period. Without your help this report would have been impossible to complete. I have got the opportunity to work in your university under the supervision of Ms. Fouzia Akter, Assistant Professor.

I therefore, request and expect that you will appreciate me with any sort of recommendation and valued suggestion and will cordially receive this report for your kind assessment.

Yours Sincerely

Susmita Das

Susmita Rani Das
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CERTIFICATE OF APPROVAL

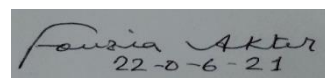
This is to certify that the dissertation entitled “**Dietary modification of several types non-communicable disease in Ahsania Mission Cancer and general Hospital**” submitted by Susmita Rani Das, a regular student of B.Sc. in Nutrition and Food Engineering, Faculty of Allied Health science, Daffodil international University, student ID: 171-34-595 successfully carried out her project work program 2.5 months under Ahsania Mission Cancer Hospital, Uttara, Dhaka. Then she completed her report on the base of dietary modification of non-communicable disease under my direction. We aware that **Susmita Rani Das** completed her report under observation of her supervisor. We ensure that her report was very essential for NFE program.



28/06/2021

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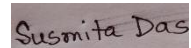
Subject: Announcement regarding the validity of the Internship Report.

Dear sir

This is my truthful declaration that the “**Internship Report**” that I have prepared is not a copy of any internship report previously makes by any other student.

I also express my honest confirmation in support of the fact that the said Internship Report has neither been used before to fulfill my other courses related nor it will be submitted to any other person in the future.

Yours Sincerely,



Susmita Rani Das
ID No: 171-34-595

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TABLE OF CONTENTS

	CONTENTS		Page Number
	Acknowledgement		v
	Table of contents		vi-viii
01	CHAPTER ONE		
	Introduction		01
1.1	About Ahsania Mission cancer and General Hospital		02
1.2	Diet and types of diet		02-03
1.3	Medical nutrition therapy and clinical nutrition		03-04
1.4	Food exchange lists		04
02	CHAPTER TWO		
	Types of Noncommunicable diseases		
2.1	Obesity and underweight Definition BMI range Obese person diet Food restrictions Underweight Underweight person food recommendations		05-06
2.2	Cardiovascular diseases Definition Types Symptoms Preventions Food restrictions		06-07
2.3	Hypertension Definition Blood pressure range Risks of high blood pressure		07-08
2.4	Diabetes Definition Types Diabetes glucose range Diagnosis Dietary modifications Complication of diabetic patients		08-09
2.5	Thyroid diseases		

	Definition Types Sign, symptoms Dietary modifications Food avoid list Hyperthyroidism Hypothyroidism		10-11
2.6	Kidney diseases Definition Types Creatinine test Diagnosis Stages of kidney disease Dietary modification Preventions		11-12
2.7	Liver diseases Definition Types Symptoms Food include list Avoided foods		12-14
2.8	Cancer Definition Types Diagnosis Treatment Side effects of cancer treatment Dietary modifications Avoided foods		14-15
2.9	Anemia Definition Causes Symptoms Diagnosis Dietary modifications Food avoid list		15-17
2.10	Polycystic Ovary Symptoms Symptoms Diagnosis Dietary modification Food avoid list		17
2.11	Gastrointestinal diseases Definition Types Included foods		17-19

	Excluded foods		
2.12	Gallstone Definition Symptoms Food include list Food avoid list		19
03	CHAPTER THREE		
3.1	Critical care nutrition Types of enteral feeding Guidelines for tube feeding Complications Advantages		20
3.2	Recommended Dietary Allowances (RDA)		21
3.3	Adult's dietary modifications Food include list Limitations of foods		21-22
3.4	Criteria of hospital management		22
3.5	Activities and observation of hospital		22
3.6	Diet chart for hypertension Male patient		23
3.7	Diet chart for kidney disease Female patient		24
3.8	Diet chart for thyroidism male patient		24-25
3.9	Diet chart for female diabetes patient		25-26
04	CHAPTER FOUR		
	Conclusion		26
	References		27-28

CHAPTER ONE

Introduction

Noncommunicable diseases means that cannot transfer from one person to another include diabetes, hypertension, cancers, cardiovascular diseases, obesity, gastrointestinal disease and also liver diseases. Due to unhealthy diet, lower physical activity, consumption of more alcoholic foods and also addicted in smoking can increase the risk of dying from these diseases. Some changes such as metabolic or physiological which increase the risk of high blood pressure (hypertension), increase fat levels in blood (hyperlipidemia), high weight status (obesity), also increase glucose levels in blood (hyperglycemia).

Globally the percentage of overweight adults were 39% and also 13% were obese in year 2014. Every year 36 million people's death and 29 million deaths in low- and middle-income countries due to noncommunicable diseases. These life threatening diseases can impact on worldwide economic growth.

In Bangladesh 59% total death from NCDs in a year and 20% men and 32 % women have high blood pressure. In 2015, 7.1 million peoples affected by diabetes. The number of people suffering from these diseases can rapidly increase day by day. The government of Bangladesh paid attention about to handle these noncommunicable diseases at the primary care level and how to prevent these life threatening diseases. [1]



1.1 About Ahsania Mission Cancer and General Hospital:

Ahsania Mission Cancer Hospital Undertook an initiative to build a 500-bed world class cancer hospital at sector 10, Uttara in the capital.

Mission & Vision

- i. Create scope for most modern health care services with special emphasis on cancer treatment at affordable cost.
- ii. 30% of the treatment facilities will be kept reserved for the poor and needy patients free of charge.

Aims of Dhaka Ahsania Mission [2]

- i. Reduce all discrimination between rich and poor patients.
- ii. Responsibilities to development of societal and idealistic of all mankind.
- iii. Responsibilities to provide effective diagnosis and treatment and reduces mortality and morbidity risk of cancers.
- iv. Enable all human beings to recognize and realize the relationship between the Creator and creation.
- v. Enable all to become conscious of a person's duty to the Creator and to his fellow human beings.
- vi. Provide all possible help to eliminate sufferings of humanity in distress.

1.2 Diet and types of diet:

Diet: Diet means getting the right types and amounts of foods and to supply nutrition and energy for maintaining body cells, tissues, and organs, for supporting normal growth and development according to daily calorie requirement.

Types of diet:

- 1. Omnivorous:** Both plant and animal foods are included in this diet. It's the most common diet among humans, and many other animals are omnivores as well, (example- many bears, birds).
- 2. Carnivorous Diet:** That diet contains eggs, meat, fish, and other animal foods and dairy products but not taken fruits, vegetables, legumes, grains, nuts and seeds.
- 3. Vegetarian diet**
 - a. Lacto-vegetarian diets: Contains fish, poultry, meat and eggs.
 - b. Dairy products: Such as yogurt, butter, ghee, milk, and cheese these foods can eaten.

- c. Ovo-vegetarian diets: Dairy products, seafood, eggs, meat and poultry.
- d. Lacto-ovo vegetarian diets: mainly contains fish, meat poultry but also allow dairy products and eggs.
- e. Vegan diets: Does not intake any animal rich products.

4. Semi-vegetarian diet

A meal plan that contains mostly planted based foods and added little animal protein.

- a) Flexitarian Diet: Intake plant-based diet such as fruits, vegetables but have moderation to intake meat and animal rich products.
- b) Kangatarian: A diet originating from Australia, also consumed kangaroo meat.
- c) Pescetarian diet: Not intake meat in this diet only intake fish.
- d) Plant-based diet: Maybe it's a fully vegetarian or maybe it is possible a plant-based diet while meat consuming occasionally.

f. Belief-based diets

- a) Buddhist diet: Does not have any specific dietary rules, and some Buddhists follows vegetarianism practice.
- b) Hindu diets: Lacto-vegetarian diets were following by Hinduism followers.
- c) Islamic dietary laws: Food that is halal-was permissible under Islamic law, and they following this diet. But haram foods not permissible under Islamic lows. [3]

Dietary Modification: The food preparation, processing, and consumption changes to increase the bioavailability of micronutrients deficiencies in food is dietary modification.

Modified diet: Modified diet means that are altered by changing foods consistency like solid food, semisolid foods and liquids foods. Foods are altered in different micronutrients. Different diseases patient diets are modified in different categories.

1.3. Medical nutrition therapy and clinical nutrition:

Medical nutrition therapy:

MNT was used to treating some medical conditions due to patient's medical conditions or symptoms according to provide effective diet and monitored by a registered nutritionist or dietician for both indoor and outdoor patients in a hospital. This diet was based on patient's physical condition, medical condition, and also dietary history. The role of this therapy when a dietician or nutritionist can reduce the risk of some condition such as obesity, high cholesterol in blood and also type 2 diabetes. That therapy can essential to live at any age also benefit by some medical

condition such as kidney diseases, reduce weight status, cancers, surgery, gastrointestinal diseases, pregnancy and also other condition. [4]

Clinical Nutrition:

Clinical nutrition means where have all nutritious rich foods for patients such as surgery, injuries and other medical conditions in clinic for proper recovery. Provide specific diet plan and feeding for patients with healthy and nutritious foods. [5]

1.4 Food exchange list:

Carbohydrate exchange list:

Foods	Calorie	CHO in (gm)
Rice (1 cup)	140	30
Ruti (1 piece)	75	15
Puffed rice (1 cup)	75	15
Chira (1 cup)	150	30
Sagu (25gm)	75	15
Semai/ Nodules (25gm)	75	15
Cornflakes (25gm)	75	15
Potato (1 piece)	25	5
Biscuits (4-5 pieces)	140	20

Protein exchange list:

Foods	Calorie	Protein in(gram)
Fish (30gm)	30	6
Meat (30gm)	30	6
Egg (1 Piece)	80	12
Peanuts (10gm)	40	6
Milk (1 cup)	80	4
Yogurt (1 cup)	160	6
Pulses (30 gm)	100	7.5

Fat exchange list:

Foods	Calorie	Fat in (gram)
Oil (15gm)	135	15
Butter (20gm)	135	15
Coconut(25gm)	135	15
Nuts (25gm)	135	15

CHAPTER TWO

Types of noncommunicable disease:

2.1 Obesity and underweight:

Obesity:

Obesity is an abnormal condition and which involving high amounts of body fat than accurate body height, and which increases high risk of other diseases and health problems, such as heart disease, diabetes, high blood pressure and certain cancers. [6]

There are many reasons to gain body weight. It depends on mainly daily lifestyle and their daily intake of foods. So, maintain proper body weight were necessary for leading better life, and in this situation should follow a balanced diet were essential for obese person.

BMI: Body Mass Index.

$BMI = \text{Weight in (kg)} / \text{Height in m}^2$

BMI range:

BMI	Weight status
Below 18.5	Underweight
18.5-24.5	Normal
25-29.9	Overweight
30 or higher	Obesity

Obese person diet plan:

1. Should eaten fresh foods.
2. Vegetables and fruits such as green and colorful vegetables and fruits such as citrus fruits.
3. Nuts, peanuts and beans in sufficient amounts.
4. High protein rich foods.

Food restriction in obesity:

1. Processed foods such as soft drinks, cookies, cakes, chips etc.
2. Not eaten alcohol rich foods.
3. High rich of carbohydrate and fat foods.
4. Fast food items. [6]

Underweight: When a person BMI range were below 18.5 then he/she is considered underweight. An underweight person health condition was not well than a normal person. There are many

reasons for a person to getting underweight such as several types diseases, genetically, low intake of foods and sometimes intake of some drugs. [7]

Underweight person food recommendations:

For underweight Person also recommended to gain their body weight by increasing calorie intake in their daily balanced diet. And should needs to intake most calorie rich foods. And also, intake high protein and carbohydrate rich foods.

1. **Proteins:** Egg, meat, whole fat milk, pulses.
2. **Carbohydrates:** whole grain pasta, whole grain breads, brown rice, cornflakes etc.
3. **Fats:** Butter, ghee, mayonnaise, cheeses, nuts etc. [7]

2.2 Cardiovascular diseases:

Cardiovascular: The cardiovascular is a circulatory system and supplies the oxygen and nutrients through blood vessels to the tissues of the body. It mainly affects heart, blood vessels, arteries and veins. When peoples fell problems mainly in heart that was called cardiovascular disease. [8]

Types of cardiovascular diseases:

1. Angina: It is a type of chest pain that occurs due to decreased blood flow into the heart.
2. Arrhythmia: It is a condition of irregular heartbeats.
3. Coronary artery disease: Which affects our arteries.
4. Heart attack: It is sudden blockage to the heart blood flow.
5. Heart failure: Heart cannot contract or relax normally.
6. Congenital heart disease.
7. Stroke.
8. Pericardial disease.

Symptoms:

1. Chest pain, chest tightness, chest pressure
2. Breath problems
3. Pain within neck, throat, upper abdomen or back
4. Slower heartbeat
5. Dizziness

Preventions:

1. **Maintain body weight:** Because obesity is a problem of different kinds of diseases. Properly maintain body weight is necessary for all ages peoples.

2. **Regular exercise:** Need minimum 30 minutes of walking or any physical activity in everyday lifestyle. Because a health weight status range can reduce to occurs many health risk diseases.
3. **Follow a heart-healthy diet:** Intake fresh fruits and vegetables, sea rich fish and fish oil, and also avoid high fat and calorie rich foods.
4. **Avoid smoking:** Avoid smoking because which responsible for many diseases.
5. **Reduce intake sodium:** Low intake of salt rich foods such as sausage, pickles and extra salt with rice. [8]

Food restriction of cardiovascular disease:

1. Processed foods, and fast foods items.
2. Salt, saturated fat, and added sugar.
3. Alcohol and tobacco.

2.3 Hypertension

Systole and diastole are two components of our cardiac cycle and supplies blood to all parts of the body. And we measure the blood pressure by systolic and diastolic pressure range. In systolic and diastolic pressure have normal range, when systolic and diastolic pressure remains normal range than higher and we called this hypertension. Now days hypertension was very common cases in all families that's why need to maintain a balanced diet was necessary for all ages group peoples. [9]

Signs and symptoms

- i. Headache
- ii. Tiredness
- iii. Pain in chest and neck
- iv. Breathing problems
- v. Irregular heartbeats
- vi. Vomiting and nausea

Blood pressure range

Normal blood pressure range between 120/80 (systolic / diastolic pressure) mm Hg.

And high blood pressure range between 140/90 (systolic/ diastolic pressure) mm Hg.

Risks of high blood pressure level

- i. Heart disease
- ii. Heart attacks

- iii. Strokes
- iv. Heart failure
- v. Kidney disease

Dietary Modifications:

- 1. Eat fresh fruits and vegetables.
- 2. Avoid intake of salt rich foods and extra salt with rice.
- 3. Eat minimally sugar rich foods, processed foods.

2.4 Diabetes:

The blood sugar level measure the amounts of glucose range in the blood by several types blood testing methods. When blood glucose range are too high than normal blood glucose range then termed as diabetes. Glucose are the main energy sources of our body and found in several types' foods mainly from carbohydrate. But too much glucose in the blood was harmful for health.

Types of diabetes:

- 1. **Type 1 diabetes:** Body produces little or doesn't make insulin.
- 2. **Type 2 diabetes:** In this type of patient's doesn't make or use insulin properly. And need to require insulin or drugs for control blood glucose levels.
- 3. **Gestational diabetes (GDM):** This type of diabetes occurs in pregnancy periods of woman and also affects child maternal health. But after pregnancy some are overcome from this diabetes due to maintain proper diet recommendation. [10]

Diabetes glucose range:

Condition	Glucose range
Normal	< 140 mg/dl (7.8 mmol/L)
Diabetes	> 200 mg/dl (11.1 mmol/L)
Pre-diabetes	Between 140 and 199 mg/dl (7.8 and 11.0 mmol/L)

Diagnosis:

Glycated hemoglobin (A1C) test:

This test measures the % of blood sugar in the hemoglobin

- 1. Normal= A1C range < 5.7%
- 2. Pre-diabetes= A1C range between 5.7 and 6.4%
- 3. Type 2 diabetes= A1C range > 6.5%

Fasting blood sugar test:

The blood sample were taken from patients without any meals.

1. Normal = Within 70 and 99 mg/dL
2. Pre -diabetes = within 100 and 125 mg/dL
3. Diabetes = > 126 mg/dL

Oral glucose tolerance test:

For testing this first of all, taken blood within fasting hour and measure the glucose level. And after that need to drink some sugar rich liquid then again testing their glucose level in the blood. [11]

Tests for gestational diabetes:

Doctor recommended to testing this during pregnancy period if their mother or father have diabetes or weight gain in pregnancy and also facing some problems. This test was done 2nd trimester of pregnancy period by oral glucose tolerance test.

Dietary modification:

1. Avoid intake too much calorie and carbohydrate rich foods.
2. Intake Banana,
3. Green coconut water,
4. Insulin to help tissue to absorb the glucose in blood.
5. Avoid sugar and processed foods.
6. Low intake of salt.

Complication of diabetic patients:

Diabetic neuropathy: This is a complication of diabetes and which affects our nerve damage due to high blood sugar levels.

Diabetic nephropathy: When people have type 1 or 2 diabetes also affects kidney related problems and kidney not working properly.

Diabetic retinopathy: Sometimes patient also affects their eyes due to diabetes and damages eyes such as vision problems and dark spot in the eyes.

2.5 Thyroid diseases:

A condition caused by over activity of the thyroid gland or excessive doses of thyroid. When thyroid gland not working properly and affects body that is called thyroid diseases.

Cretinism: This is a condition of thyroid gland and mainly affects newly born child because of lower intake of iodine in pregnancy period.

Myxedema: When thyroid hormone not produces properly then sometimes also affected by this condition.

Types:

1. Hypothyroidism: Hypo means normal than lower or smaller, so hypothyroidism means when gland of thyroid produces normal than lower thyroid hormones. [13]

Sign and symptoms:

- i. Fatigue
- ii. Constipation
- iii. Dry skin
- iv. Weight gain
- v. Puffy face
- vi. Muscle weakness
- vii. Pain, stiffness or swelling in your joints
- viii. Irregular periods
- ix. Thinning hair
- x. Slowed heart rate
- xi. Depression

Complications:

- i. Heart problems
- ii. Mental problems
- iii. Myxedema
- iv. Infertility
- v. Goiter

Dietary modification:

1. Eggs, meats
2. Fish: Sea fish are best because of high in iodine.
3. Vegetables: All vegetables but cruciferous vegetables eat in moderate amounts.
4. Fruits: Fruits such as bananas, oranges, tomatoes, etc.
5. Dairy: All dairy products, such as milk, cheese, yogurt, etc.

Avoid foods:

1. Highly processed foods.
2. Fast foods.
3. Goitrogen foods such as broccoli, cabbage, cauliflower strawberries, coffee, alcohol.

2. **Hyperthyroidism:** That means the gland of thyroid produces normal than higher thyroid hormones. [14]

Symptoms:

- i. Weight loss
- ii. Irregular heartbeat
- iii. Increased appetite
- iv. Nervousness, anxiety and irritability
- v. Sweating
- vi. Goiter

Dietary modification:

1. Whole grains such as brown rice, wheat, etc.
2. Rich in calcium and iron.

Avoided foods:

Avoid eating seafood such as fish, plant grown around the sea, because seafoods contain high amounts of iodine.

2.6 Kidney diseases:

Kidneys are the vital organs of our body, which removes our wastes and extra urine from the body. When kidneys not working properly and facing problems in the body that's called kidney diseases. [15]

Types:

1. Glomerulonephritis
2. Nephrotic syndrome
3. Chronic renal failure
4. Polycystic kidney disease
5. kidney stones

Creatinine test: This is a blood test and measure the creatinine levels presents in the blood. In the blood normal creatinine range was 0.7-1.1 mg/dl. Doctor recommended for this test to observe about kidneys function working properly or not.

Diagnosis: Tests that help to diagnosis kidney disease include:

- i. Checking blood pressure.
- ii. Urine test
- iii. Blood test: (creatinine and urea).
- iv. Estimated Glomerular Filtration Rate test
- v. Imaging test: Ultrasound or CT scan to look for abnormalities in kidney and urinary tract.

Stages of kidney diseases: 5 stages of kidney disease. [16]

Stages	Kidney function (GFR)	Description
Stage 1	>90 %	Normal or high function
Stage 2	60- 89 %	Mildly decreased function
Stage 3	30- 59 %	Mild to moderate decreased function
Stage 4	15- 29 %	Severely decreased function
Stage 5	<15 %	Kidney failure

Dietary modification

1. Fluids like water, green coconut water and barley water and fruit juices.
2. Vitamin A may be helpful for these patients.
3. Restricted food rich in calcium and uric acid.

Prevention of kidney disease

1. Drink many water
2. Control glucose if anyone have diabetes
3. Control pressure
4. Reduce salt intake
5. Quit smoking

2.7 Liver diseases:

The main function of the liver that can filter the blood in the body and remove some substances which harmful for our body and also help to digest some foods. When people facing problems in the livers that termed as liver diseases. There are many types of liver disease these are on the following: [17]

Hepatitis:

Hepatitis A: This spread through contract with contaminated food or water.

Hepatitis B: Can be spread through body fluids, such as blood and semen.

Hepatitis C: It's often spread through contract with blood from someone have hepatitis C.

Food included:

1. Whole wheat, brown rice.
2. Fruits except citrus fruits.
3. All vegetables.

4. Pulses and legumes.
5. Dairy products.
6. Egg white.

1. Fatty liver disease:

Mainly two types:

- i. Alcoholic fatty liver disease.
- ii. And non- alcoholic fatty liver disease.

Symptoms:

- i. Abdominal pain.
- ii. Weight loss.
- iii. Loss of appetite.
- iv. Fatigue.
- v. Nausea.
- vi. Yellowing of the skin and eyes.
- vii. Swelling of the legs (edema).

Food included:

1. Fish and seafood.
2. Fruits.
3. Whole grains.
4. Nuts.
5. Legumes.

Avoided foods:

1. Poultry
2. Yogurt
3. Red meat

2. Jaundice:

Symptoms:

- i. Fever
- ii. Abdominal pain
- iii. Change in skin color
- iv. Dark colored urine

Food included:

1. Intake liquids rich foods such as water, fruit juices.
2. Fresh fruits such as orange, papaya, banana, mango etc.
3. Fiber rich foods such as whole grains, breads, rice etc.

Food avoided:

1. Saturated fat like meat.
2. Unsaturated fat such as olive oil.
3. Reduce sodium intake.
4. Avoid canned and processed foods.

Diagnosis

Doctor may be recommended to checking this test:

1. Blood tests
2. Imaging tests: CT scan and MRI can detect in liver.
3. Biopsy testing
4. Bilirubin test

2.8 Cancer: There are several types of cancer attack different ages peoples. In Bangladesh ours most common types cancer are breast, liver, lung, tongue cancer etc. Peoples mostly affected by these cancers. [18]

Types of cancer:

1. Lung cancer
2. Breast cancer
3. Stomach cancer
4. Prostate cancer
5. Esophagus
6. Melanoma
7. Bladder cancer
8. Blood cancer
9. Kidney cancer
10. Thyroid cancer
11. Liver cancer

Diagnosis:

- i. **Physical exam:** Physical exam like any changes of skin or any types of organs of body.
- ii. **Laboratory tests:** Like blood test and urine test to ensure have cancer or not.
- iii. **Imaging tests:** Doctor referred for test MRI, CT scan, X-ray, ultrasound etc.
- iv. **Biopsy:** In most cases need to diagnoses biopsy test for ensure cancer.

Treatment:

- i. **Surgery:** By surgery to remove cancer by an operation and that was very much effective and oldest treatment process. Large number of patients can treat their cancer by surgery.
- ii. **Chemotherapy:** To remove or kill most cancer cell used several types drugs by chemotherapy treatment. In AMCGH have chemotherapy unit for cancer patient.

- iii. **Radiation therapy:** In radiation therapy used high radiation energy to treated cancer patients and destroys some malignant cells.
- iv. **Bone marrow transplant:** In some case for cancer treatment transplant bone marrow.
- v. **Immunotherapy:** It is a therapy which strongest immune system of patients to fight cancer.

Side Effects of Cancer Treatment

- i. Anemia
- ii. Appetite Loss
- iii. Bleeding
- iv. Constipation
- v. Diarrhea
- vi. Edema (Swelling)
- vii. Fatigue
- viii. Fertility Issues
- ix. Flu-Like Symptoms
- x. Hair Loss

Dietary modification:

1. Choose lower calorie foods, like fresh vegetables and fruits.
2. Eat higher fiber foods such as whole grains, nuts and beans.
3. Vegetables like tomato, carrot, pumpkin, cauliflower.
4. Intake bitter gourd which reduces sugar levels in blood.
5. Green leafy vegetables because of good sources of calcium and iron.
6. Citrus fruits such as oranges, mangoes, guava etc.
7. Dairy products.
8. Whole grain bread, rice.

Food avoid list:

1. Deep fried, grilled, baked meat.
2. Excessive intake of salt, sugar and oily foods.
3. Processed foods.
4. Avoid intake alcohol.

2.9 Anemia:

Hemoglobin are molecule and present in red blood cell and supply oxygen by help of lungs to the body. When hemoglobin level reduces in the blood than normal range that termed as anemia. [19]

Causes of iron anemia:

- i. Lower intake of iron.
- ii. Pregnancy and heavy menstruation.

- iii. Inadequate diet.
- iv. Unable to absorb iron.
- v. Miscarriage in pregnancy and bleeding problems.

Symptoms:

- i. Weakness
- ii. Fatigue
- iii. Faded skin
- iv. Breath problems
- v. Dizziness
- vi. Swelling tongue
- vii. Irregular heartbeats
- viii. Headache

Diagnosis:

Complete blood cell (CBC) test:

Measure the amount of blood component,

- I. Red blood cell (RBC)
- II. Hemoglobin
- III. White blood cell (WBC) and
- IV. Platelets

Hemoglobin range:

For women= Hemoglobin range among 12-15.5 g/dl.

For men= Hemoglobin range among 13.5-17.5 g/dl.

Dietary modification:

Iron rich foods:

- 1. Leafy green vegetables.
- 2. Liver, red meat
- 3. Pumpkin
- 4. Egg
- 5. Beans
- 6. Fruits like apple, banana, beetroot and pomegranate.

Food rich in vitamin C: Oranges, grapes, papaya, pineapple, melon, mangoes, tomato.

Folic acid: Foods such as fresh fruit juices, green leafy vegetables, seafood, etc.

Vitamin B-12: Consumption of shellfish, skim milk, cereals rich foods.

Food avoid list:

- 1. Tea and coffee.

2. Whole grain cereals.
3. Food rich in gluten such as pasta, barley, rye etc.

2.10 Polycystic Ovary Syndrome (PCOS):

This is a hormonal condition of women's and affects ovaries in the reproductive system. [20]

Features of PCOS are:

1. Excess androgen
2. Periods not regular
3. Polycystic ovaries

Symptoms:

- I. Period irregular or no period.
- II. Excessive hair growth, on the face.
- III. Weight gain.
- IV. Oily skin or acne.
- V. Hair loss.

Diagnosis:

- I. A pelvic exam: It is a physical examination of woman's reproductive organs and checks any abnormalities of cervix, vagina, ovaries and uterus.
- II. Blood tests: Measure the levels of hormones.
- III. An ultrasound: Checking ovaries.

Dietary modification:

1. Lower intake of carbohydrate for weight loss and lower blood sugar levels.
2. An anti-inflammatory diet, such as fatty fish, leafy green vegetables.
3. Fish, poultry, low fat dairy products.

Food avoid list:

1. Refined CHO, such as white bread, pastries.
2. Fried foods such as fast foods.
3. Sugary beverages, processed meat, solid fat etc.

2.11 Gastrointestinal disease:

That are a common disorder of our digestive systems and affected mainly pancreas, liver, gallbladder of our body. We affected several types of gastrointestinal diseases, but most common diseases were on the following: [21]

Constipation:

Those gastrointestinal diseases were commonest in all aged group peoples. Many causes of constipation mainly lower intake of fiber rich foods, inadequate lifestyle, and also intake of small liquids. When people faced some situation such as abdominal pain, irregular bowel movements, come out normal stool than less, severe pain when movements hard stool that termed as constipation.

Dietary modifications:

1. Consumption of high fiber rich foods.
2. Eat more liquid rich foods like water, fruit juices in their daily lifestyle.

Food included:**Fiber rich foods:**

1. Whole grains, whole wheat bread.
2. Fruits such as berries, apples, oranges.
3. Nuts such as almond, peanut etc.

Avoid foods:

1. Fast foods.
2. Processed foods.
3. Oily and spicy foods.

Peptic ulcer:

That are a painful condition of blow or ulcers and affected our stomach, small intestine and esophagus. People affected by these ulcers causes of intake of alcohol, smoking, some bacteria attack our stomach, and inadequate diet. And commonest symptoms were chest and abdominal pain. When fell these painful situation doctor recommended to testing some diagnosis and identify their diseases.

Dietary modification: High fiber diet decreases the risk of developing ulcer diseases.

Food included:

1. Fiber rich foods.
2. Good sources of vitamin A such as green leafy vegetables, carrot.
3. Fresh fruits such as papaya, mango.

Food excluded:

1. Alcohol rich foods.
2. Minimize or avoid intake of caffeine rich foods.
3. Avoid processed and spicy foods.
4. Oily foods such as junk foods.

Diarrhea:

Diarrhea is a digestive condition that causes loose or watery stools that happens in a day more than 3- 4 times. It creates the excessive loss of fluids in the stool, due to passing looser stool than usual. It happens due to viral and bacterial infection.

Food included:

1. Drink 8-10 cups of liquid per day like water, saline, fruit juices or green coconut water.
2. Plain rice/ porridge rice.
3. Raw banana.
4. Boiled potatoes.

Food avoid list:

1. Avoid milk or dairy products in this time.
2. Fried, fatty foods.
3. Spicy and oily foods.

IBS:

IBS are a disorder of gastrointestinal diseases and symptoms mainly constipation, abdominal pain, diarrhea and affected our stomach. Can be diagnosis IBS by x-ray, colonoscopy, and some blood test.

Food included:

1. Eat all cooked vegetables except cabbage, cauliflower and broccoli.
2. Fruits without skin.
3. Meat, chicken and fish.

Food avoid list:

1. Gluten rich foods such as, rye, barley.
2. Dairy products.
3. Processed foods.
4. Fried foods.

2.12 Gall stone:

Gallbladder are a smallest organ and connected with liver of our body. Gallbladder can digest fat due to stores and release of the bile. Gallstones means stone like objects found in the gallbladder due to excessive amounts of cholesterol and bilirubin present in the bile. These stone can be removes by surgery treatment. [22]

Symptoms:

1. Nausea and vomiting
2. Less appetite
3. Abdomen pain
4. Diarrhea
5. Sometime happens jaundice
6. Slower heartbeat than normal
7. Dry skin

Food included:

1. Starchy carbohydrates such as bread, rice, cereals.
2. Low fat dairy products.
3. Beans, pulses.
4. Fiber rich foods such as fruits, vegetables, wholegrain products.

Food avoid list:

1. High fat dairy products.
2. Butter.
3. Processed foods.

CHAPTER THREE

3.1 Critical care Nutrition:

Tube feeding: Tube feeding means feed liquids by tube systems to getting proper nutrients for body requirements. These are recommended for patients when they unable to intake foods by mouth. So used flexible tube through nose to delivered normal foods but in liquids form and also some drugs into the stomach. Tube feeding mainly used for cancer patients, coma and also mental illness patients.

Types of enteral feeding:

Nasogastric feeding tube: This feeding tube attached with nose and finished in the stomach. Mainly used for short time but some infants and children used for long term feeding.

Nasojejunal feeding tube: This tube also attached with nose to the stomach but finished in the small intestine.

Gastrostomy or gastric feeding tube: This tube attached directly with the stomach of the body.

Jejunal feeding tube: This feeding tube used surgically and attached with jejunum through endoscopy. [23]

Guidelines for tube feeding:

1. Foods must be blend with water and mixed very well.
2. Avoid hot foods put into the tube, when food at normal room temperature then ready to put into tube.
3. Not allow to put any leafy vegetables. Because which is not smooth.
4. Attention about foods thickness, very thick foods is not stable to go into the pipe of tube feeding.

Complications of tube feeding:

1. Constipation.
2. Dehydration.
3. Diarrhea.
4. Skin issues.
5. Infection in abdomen.
6. Unintentional tears in intestines

Advantages:

1. More physiologic.
2. Enteral pump not required.
3. Limits feeding time so patient is free to ambulate.
4. Inexpensive and easy.
5. Makes it more likely patient will receive proper nutrients.

3.2 Recommended Dietary Allowances (RDA): RDA for all aged group peoples: [24]

Nutrients	Age (11-14) children	Age (25-50) Male	Age (25-50) Female
Calories (kcal)	2500	2700	2200
Protein (gm)	45	63	50
Vitamin A (μg)	1000	1000	800
Vitamin E (mg)	10	10	8
Vitamin D (μg)	10	5	5
Vitamin C (mg)	50	60	60
Vitamin K (μg)	45	80	60
Thiamin (mg)	1.3	1.2	1.1
Riboflavin (mg)	1.5	1.4	1.3
Niacin (mg)	17	15	15
Vitamin B6 (μg)	1.7	2	1.6
Vitamin B12 (mg)	2.0	2.0	2.0
Calcium (mg)	1200	800	800
Phosphorous (mg)	1200	800	800
Magnesium (mg)	270	350	280
Iron (mg)	12	10	15
Zinc (μg)	15	15	12
Iodine (μg)	150	150	150
Selenium (μg)	40	70	55

3.3 Adults' dietary modification:

In adult aged should need to maintain some dietary modification causes in this period peoples affected by several types noncommunicable diseases. When they eaten health foods may be reduces or overcome from those problems as much as possible. So balanced diet was recommended for all aged group peoples and also some physical activity.

1. Consumption of fresh fruits and vegetables.
2. Drinking more water in a day.
3. Intake foods less in cholesterol and fats.
4. Reduced eaten salt and sodium rich foods.
5. Avoid or lower intake of sugar.

Food include list:

1. Fruits such as banana, orange, grapes, persimmon, mango etc.
2. Fiber rich foods such as whole grain cereals, bread.
3. Intake egg, fish, meat but not more in amounts.
4. Consumption fat free milk if have hypertension, and other heart diseases.

Should avoid foods:

1. Higher rich fats such as butter, gee, margarine.
2. Avoid processed and bakery foods.
3. Reduce extra salt in rice.
4. Avoid smoking and alcohol.
5. Less intake of tea and coffee.

3.4 Criteria of hospital kitchen management:**A well-planned hospital kitchen should:**

1. Adequate facilities for storage of raw material.
2. Should have proper space for cooking foods.
3. Also have to space for proper cleaning of raw materials.
4. Adequate storage space for equipment, utensils, spoon, and knives.
5. Proper facilities for aprons and hand gloves, and ware in cooking times.

In AMCGH have kitchen facilities for both indoor and outdoors patients. For indoor patients serving 3 times meals. Both meals are nutritious rich foods and also used lower oil and spices for prepared food for patients. In everyday dietician can check patients' foods and advised to chef that was healthy or not.

3.5 Activities and observation of hospital:

In AMCGH mainly cancer patients are come here for treated but these patients also affected by other noncommunicable disease. This hospital was a NGOs organization and here comes both rich and rural peoples for their treatment. Having facilities for both indoor and outdoor patients.

Daily follow up session: We starts our works in every day at 10 am to 2 pm. Our hospital supervisor help in this session and with the help of dietician we collect patients medical file from the nurse section and observe how much patients were newly admitted and old patients stay in the hospital or release from the hospital. And also collect their medical condition and age, height, and weight for making diet chart.

Word round: We visited 6th and 7th floor for word round because in these 2 floors have word for indoor patients. In this hospital have many words facilities for patients and we visited with our hospital supervisor (dietician) and advised patients for their recommended foods and also avoid foods. Due to their health condition we suggest to take these foods. But when need to specific diet chart for a patient then consult with hospital dietician.

Hospital kitchen round: In intern period we also visited hospital kitchen causes of how they prepared foods for patients that are hygienic nor not. Hospital dietician can check patient's foods that are healthiest or not. When used more oil or spices then should advised

to chef for used less oil and spices. And after checking cooking foods written comment in a register file that are good or not also some advised.

3.6 Diet chart for hypertension patient: (Male)

Age: 72, Height: 157 cm, Weight: 53

Complications:

Hemoglobin: low, K+: low.

Diet: Normal

BMI= $53 / (1.57)^2 = 21.50$

Mifflin equation= $10 \times (\text{weight in kg}) + 6.25 \times (\text{height in cm}) - 5 \times \text{age} + 5$
 $= 1156.25$ calorie

TER= 1156×1.78

$= 2058$ calorie

CHO= $2000 \times 0.6 / 4 = 300$ g

Protein = $2000 \times 0.15 / 4 = 75$ g

Fat = $2000 \times 0.25 / 9 = 55$ g

Meal	Food items	Quality
Morning	Ruti Vegetables Egg	3 pieces 1 cup 1 piece
Mid-morning	Tea with biscuits Fruits	5-6 piece 2 pieces
Lunch	Rice Fish/Meat Vegetables Pulse	3 cups 3 pieces 1 cup 1 cup
Evening	Low fat milk Puffed rice	1 cup 1 cup
Dinner	Rice Meat/ fish Pulse	2 cups 2 pieces 1 cup
Bed time	Yogurt	1 cup

Food included:

- a. Green coconut water, banana.
- b. Vitamin C rich food such as orange, lemon, tomato, carrot.
- c. Fruit juice.

Food excluded:

- a. Processed foods, fast foods.
- b. Spicy and oily foods.

3.7 Diet chart for kidney disease: (Female)

Weight: 58 kg, Height: 148 cm, Age: 52 years

Complications:

Na⁺ = 128 mmol/L

K⁺ = 3.1 mmol/L

Albumin= 3.4 g/ dL

Creatinine=1.4 mg/dL

Diet: Normal

BMI= 58/ (1.48) ²= 26.47

TER= 2000 calorie per day.

Meal	Food items	Quantity
Morning	Ruti	3 pieces
	Egg	1 piece
	Vegetables	2 cups
Mid –morning	Milk	1 glass
	Biscuits	4-5 piece
	Fruits	2 pieces
Lunch	Rice	2 cups
	Vegetables	2 cups
	Meat/ fish	3 pieces
Evening	Fruit custard/ pudding	1 cup
Dinner	Rice	2 cups
	Meat/ fish	2 cups
	Vegetables	2 cups
Bed time	Milk	1 cup

Food included:

- Green coconut water, banana.
- Tomato
- Egg white portion.

Food avoided:

- Pulses and seed rich foods.
- Processed and fast foods.

3.8 Diet chart for thyroidism male patient:

Weight: 78 kg, Height: 165 cm, Age: 65 years

Complications:

THS: 7.4 mg/dl

Diet: Normal

BMI= $78/(1.65)^2 = 28.65$
 TER= 2400 calorie per day

Meals	Food items	Quantity
Morning	Ruti Egg Vegetables	4 pieces 1 piece 2 cups
Mid- morning	Milk Puffed rice Fruits	1 glass 2 cups 2 pieces
Lunch	Rice Meat/ fish Vegetables Pulse	4 cups 4 pieces 2 cups 2 cups
Evening	Tea with biscuits Soup	1 cup/ 4-5 pieces 1 cup
Dinner	Ruti vegetables Meat/ fish	2 pieces 2 cups 4 pieces
Bed time	Yogurt/ pudding	1 cup

Food included:

- a. Fresh fruits and vegetables.
- b. Milk, whole grains, rice etc.

Food excluded:

- a. Sugar rich foods and processed foods.
- b. Cauliflower, cabbage, ladies' finger.
- c. Pulses rich foods.

3.9 Diet chart for female diabetes patient:

Weight: 50kg, Height: 155 cm, Age: 48 years

Complications:

Hemoglobin: 10 g/dl, and also have constipation.

BMI= $50/ (1.55) ^2 = 20.81$

TER= 1800 calorie per day

Meals	Food items	Quantity
Morning	Ruti Egg Vegetables	3 pieces 1 1 cup
Mid- morning	Milk	1 cup

	Biscuits	3-4 pieces
	Fruits	2 pieces
Lunch	Rice	2 cups
	Fish/ meat	2 pieces
	Vegetables	2 cups
	Pulse	2 cups
Evening	Milk	1 cup
	Puffed rice	1 cup
	Egg	1
Dinner	Rice	2 cups
	Meat/ fish	2 pieces
	Pulse	1 cup
Bed time	Yogurt	1 cup

Food included:

- a. Fresh fruits and vegetables.
- b. Egg white.
- c. Fruit juices, tomato.

Food excluded:

- a. Sugar rich foods.
- b. Processed and fast foods.
- c. Spicy and oil rich foods.

CHAPTER FOUR

Conclusion:

This report has been conducted to assess the impact and dietary modification of several types of noncommunicable diseases. These diseases affected all age groups, religious groups, and overall, in all countries. To prevent these diseases, first of all, we need to be aware of people and change their diets and lifestyles. Foods such as whole grains, meat are good for health, and higher intake of sugary foods, processed foods, smoking, alcohol, and processed meat can be harmful to our bodies. A healthy body mass index can prevent such diseases, as a higher weight status can lead to several types of diseases. At last, we should need to maintain a balanced weight due to the intake of more nutritious foods and also some physical activity. This study might be better, but due to the pandemic situation, I was unable to do this in a more effective way. In the future, when I have a chance to work on this study, I will explore this in a more effective way.

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Thanks for watching....