

Practical Manual
FN509 Advanced Diet Therapy (2+1)

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2018

FN509: ADVANCED DIET THERAPY (2+1)

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Exercise No.1

PLANNED DIET FOR A PREGNANT WOMAN

AIM:

To plan, prepare, serve and evaluate a day's diet for a pregnant woman

INTRODUCTION:

- Adequate nutrition before and during pregnancy has greater potential for long term health impact than it does at any other time.
- Maternal health is a complex, influenced by various genetics, social and economic factors, infections and environmental conditions, many of which may affect the foetal growth.
- Physiological adaptations result in improved utilisation of nutrients, either through increased absorption or decreased excretion or alterations in metabolism.
- A woman who has been well nourished before conception, begins her pregnancy with reserves of several nutrients so that the needs of the growing foetus can be met without affecting her health.
- Infants, who are well nourished in the womb, have an enhanced chance of entering life in good physical and mental health.
- The effects of under nutrition during reproduction will vary depending upon the nutrients involved, the length of time it is lacking and the stage of gestation at which it occurs.
- A woman whose diet is adequate before pregnancy is usually able to bear a full term viable infant, without intensive modifications other diet.
- Mothers diet should provide adequate nutrients so that maternal stores do not get depleted and produce sufficient milk to nourish her child after birth.
- The nutritional demands are highly increased in an adolescent mother

PRINCIPLE OF THE DIET

- A well balanced diet with additional amount of calories, protein, fat, vitamins and minerals especially additional amount of iron and folic acid are recommended for pregnancy
- Small and frequent meals as pregnancy advances

RECOMMENDED DIETARY ALLOWANCES

NUTRIENTS	NORMAL RDA	MODIFIED RDA
Energy (Kcal)	1900	+350
Proteins (g)	55	78
Visible fat(g)	20	30
Calcium (mg)	600	1200
Iron (mg)	21	35
Vitamin A		
Retinol (μ)	600	800
B-Carotene (μ)	4800	6400
Thiamine (mg)	1.0	+0.2
Riboflavin (mg)	1.1	+0.3
Vitamin C (mg)	40	60

PORTION SIZE

FOOD STUFF	PORTION	AMOUNT (g)
Cereals and millets	10	300
Pulses	4	120
Milk and its product	5	500
Roots and Tubers	2	200
Green leafy vegetables	2	200
Other vegetables	2	200
Fruits	2	200
Sugar	4	20
Fats and oils	6	30
Fish	1	60

MENU PLANNING – For Example:

TIME	FOOD ITEM	QUANTITY	INGREDIENTS	Weight in g / ml
06:00 AM	Green tea	1 Cup	Tea	2g
	Biscuit	2 Nos	Maida	6g
08:00 AM	Puttu	2 pieces	Rice flour	80g
	Bengal gram curry	1 Cup	Coconut	10g
	Banana	1 No.	Bengal gram	40g
	Milk	1 Glass	Tomato	5g
10:00 AM	Sharjah shake	1 Glass	Banana	100g
			Milk	100ml
			Dates	5g
			Groundnut	5g
	French Toast	2 Slices	Bread	30g
			Egg	40g
01:00 PM	Rice	2 Cups	Sugar	5g
	Sambar	1 Cup	Rice	120g
			Potato	10g
			Tomato	10g
			Ladies finger	10g
			Onion	10g
			Carrot	10g
Fish fry	1 No	Red gram dhal	15g	
		Sardine	25g	
	Carrot Thoran	½ Cup	Carrot	50g
			Coconut	10g
	Raita	1 Cup	Carrot	10g

			Cucumber Onion Curd	10g 10g 50ml
03:00 PM	Sprouted green gram Ragi Ladoo Muskmelon juice	1 Cup 2 Nos 1 Glass	Sprouted green gram Coconut Ragi Coconut Jaggery Musk melon Sugar	25g 10g 50g 10g 10g 50g 5g
05:00 PM	Fruit Custard	1 Cup	Milk Custard powder Apple Banana Pomegranate	100ml 5g 10g 10g 10g
08:00 PM	Mushroom Soup Amaranth Chappathi Veg Kurma	1 Cup 3 Nos. 1 Cup	Mushroom Onion Garlic Wheat Flour Amaranth Cauliflower Potato Green piece Carrot Beans Tomato Onion Chilli	60g 5g 5g 100 g 50g 25g 15g 25g 10g 20g 20g 10g 5g
09:00 PM	Badam Shake	1 Glass	Milk Sugar Badam	100ml 5g 20g

Calculate the Nutritive Value of the Diet Planned: For Example:

INGREDIENTS	QUANTIT Y (g)	PROTEIN (g)	ENERGY (Kcal)	FAT (g)	CHO (g)	FIBRE (g)
Rice flour	80 g					
Maida	6g					
Coconut	20 g					
Bengal gram	40 g					
Tomato	20 g					
Milk	400 ml					
Sugar	25 g					
Banana	70 g					
Dates	10 g					
Egg	40 g					
Rice	120 g					
Potato	25 g					

Ladies finger	10 g					
Onion	20 g					
Carrot	70 g					
Red gram dhal	10 g					
Sardine	25 g					
Cucumber	10 g					
Curd	50 ml					
Muskmelon	50 g					
Sprouted green gram	25 g					
Coriander	5 g					
Chilli	5 g					
Custard powder	5 g					
Apple	10 g					
Pomegranate	10 g					
Mushroom	60g					
Garlic	5 g					
Wheat flour	25 g					
Amaranth	50 g					
Cauliflower	25 g					
Green peas	25 g					
Beans	20 g					
Almond	20 g					
Ragi	60 g					
Oil	20 ml					
Ghee	5 ml					
Groundnut	15 g					
Diet	Example	80.89 g	2315.24 Kcal	73.09 g	351.98	61.69
RDA	Example	78 g	2250	Visible fat=30 g	300	-

Results and Discussion: For example:

For a pregnant woman whose diet has conformed to the “Basic Five Food” pattern, It is merely a matter of emphasising the more nutrient dense foods within each of the Five groups. Nutrients dense foods are those that give the most nutrients per calorie consumed.

The planned diet provides 2315.24 Kcal, 80.98 g of protein, 73.09g of total fat, 351.98 g of carbohydrate and 61.69 g of fibre. The diet is rich in iron, calorie and protein.

Activity:

- Aim – Special Features – Importance of Balanced Diet during pregnancy.
- Importance of Folic acid, Iron, Calcium, vitamins, minerals and major proximate principles
- Plan a Balanced diet for a pregnant Woman.
- Calculate the Food requirement (as per ICMR Classification) and compare it with RDA
- Calculate the Nutrient Contents of the diet planned and compare it with RDA

- Attach Action pictures (Preparation of Balanced Diets)
- Original pictures of pregnant woman eating Balanced diets (Optional).
- Take pictures of Menu prepared for pregnant woman (with proper delicious dishes with beautiful Menu Card, presented neatly on a well laid Table).
- Organoleptic scores of each nutritious & tasty dishes prepared (pictures)
- Prepare tables and graphs.
- Evaluate critically on adequacy of the planned diet.
- Apply appropriate statistical tool if needed
- Substantiate your findings with adequate recent scientific studies.
- Collect adequate Review of literature
- References

Exercise No.2

PLANNED DIET FOR DIARRHOEA

AIM:

To plan, prepare, serve and evaluate a day's diet for a sedentary woman with diarrhoea.

INTRODUCTION

- Diarrhoea is the term describing the **regular passing of loose or watery stools or passing more frequently than an individual is used to.**
- A balanced diet is particularly important in maintaining the health of the digestive system.
- But when suffering from loose stools it can be difficult to know what to eat, what to avoid or whether to eat at all.
- When experiencing diarrhoea it is recommended that certain foods be avoided until symptoms improve.

Foods to avoid:

- ❖ **High fibre cereals such as flakes**
- ❖ **Fatty or fried foods**
- ❖ **Pickled or spicy foods**
- ❖ **Caffeine and alcohol**

PRINCIPLE OF DIET

- Nutritional care for adults with diarrhoea includes the replacement of lost fluids and electrolytes by increasing the oral intake of fluids, particularly those **high in sodium and potassium such as broths and electrolyte solutions.**
- **Pectin from cooked / baked apples or other soluble fibre may also help in controlling diarrhoea. Barley, banana, curd, rice and potatoes may lessen diarrhoea.**

MENU PLANNING: For Example:

TIME	FOOD ITEM	INGREDIENTS	AMOUNT
Early morning	Black tea	Sugar	5g
	Arrow root biscuit	Arrow root Powder	5g
Breakfast	Iddli	Rice	60g
		Black gram dal	30g
	Sambar	Red gram dal	20g
		Onion	15g
Ladies finger		25g	
Apple juice	Brinjal	25g	
	Apple	50g	
Mid- Morning	French toast	Sugar	5g
		Bread	50g
		Milk	50 ml
		Egg	1 No.

	Pomegranate juice	Pomegranate Sugar	1 No. 5g
Lunch	Vegetable rice	Rice Beans Onion Tomato Carrot	60g 25g 25g 25g 25g
	Curd or kadhi	Curd	100 ml
	Payasam	Vermicelli Moong dal Coconut milk Jaggery	25g 25g 50g 10g
	Baked / Cooked Apple	Apple	100g
Teatime	Kesari	Semolina Sugar	80g 5g
	Black tea	Sugar	5g
Dinner	Kanji	Rice	50g
	Payarthoran	Green gram Onion	25g 25g
	Chamanthi	Coconut	20g
Post dinner	Lassi	Curd Sugar	120 ml 5g

PORTION SIZES

FOOD STUFF	PORTION	AMOUNT(g)
Cereals and millets	10	270
Pulses	4	60
Milk and its product	5	300
Roots and tubers	2	200
Green leafy vegetables	2	200
Other vegetables	2	200
Fruits	2	200
Sugar	4	20
Fats and oils	5	20

COMPARISON OF NUTRIENTS WITH NORMAL RDA AND MODIFIED RDA

NUTRIENTS	NORMAL RDA	MODIFIED RDA
Energy (Kcal)	1900	1800
Protein (g)	55	65
Fat (g)	20	20
Calcium (g)	600	600
Iron (mg)	21	21
Vitamin A- Retinol (μ)	600	
Retinol (μg)		600
B-Carotene (μg)	4800	4800

Calculate the nutritive Value of the Planned Diet: For Example:

INGREDIENTS	QUANTITY (g) / ml	ENERGY (Kcal)	PROTEIN (g)	FAT (g)	FIBRE (g)	CHO (g)
Sugar	20					
Black gram dal	30					
Red gram dal	16					
Onion	76					
Ladies finger	25					
Brinjal	25					
Milk	150ml					
Egg	40					
Apple	150					
Pomegranate	50					
Rice	170					
Arrow root Powder	5					
Beans	22					
Dal	20					
Tomato	50					
Carrot	25					
Curd	300					
Moong dal	25					
Coconut milk	50 ml					
Jaggery	10					
Semolina	30					
Green gram	25					
Coconut	20					
Bread	50					
Cooking oil	25ml					
Ghee	5					
TOTAL	Example	1826.75	58.17	74.42	23.39	205.59
RDA	Example	1900	55.0	Visible fat=20	40g	300

Results and Discussions: For example:

When experiencing diarrhoea, it is suggested to eat solid foods as soon as one can feed to them. It is recommended when suffering with the condition, small, light meals can be eaten, and salty foods are a good option for diarrhoea diet.

Activity:

- Aim – Special Features – Importance of therapeutic Diet for diarrhoea especially in maintaining fluid balance in the body.
- Importance of vitamins, minerals and major proximate principles in maintaining the integrity of body cells and maintenance of intracellular and extracellular fluids in the body during diarrhoea.
- **Plan a therapeutic diet for a diarrhoea patient**
- Calculate the Food requirement (as per ICMR Classification) and compare it with RDA
- Calculate the Nutrient Contents of the diet planned and compare it with RDA
- Attach Action pictures (preparations of the dishes)
- Original pictures of diarrhoea patients having their diets (Optional).
- Take pictures of Menu prepared for Diarrhoea (with proper delicious dishes with beautiful Menu Card, presented neatly on a well laid Table).
- Organoleptic scores of each nutritious & tasty dishes prepared (pictures)
- Prepare tables and graphs.
- Evaluate critically on adequacy of the planned diet.
- Apply appropriate statistical tool if needed
- Substantiate your findings with adequate recent scientific studies.
- Collect adequate Review of literature
- References

Exercise No.3

PLANNED DIET FOR A DIABETES MELLITUS

Aim:

To plan, purpose, serve and evaluate a day's diet for an adult man suffering from diabetes mellitus.

Introduction:

- **Diabetes**, the Latin word means “**flow through**” and **mellitus** means **honey** and clinically it manifest by the **over flow of sugar or glucose in blood and urine instead of getting converted into glycogen.**
- Diabetes mellitus is a chronic metabolic disorder that prevents the body to utilise glucose completely or partially.
- Its characterised by **raised concentration of glucose in the blood and alteration in carbohydrate, protein and fat metabolism.**
- Individuals who suffer from diabetes all have raised blood sugar or glucose levels. The cause of **these high blood sugar levels** is either an inability to produce enough **insulin(a hormone produced by the pancreas)**, or a **decrease in the sensitivity of body cells to insulin, so-called insulin resistance.**
- The food we eat is digested and broken down into simple components. One of these simple components is called glucose which is obtained from carbohydrate breakdown.
- Glucose is the main source of energy in the body and this is why it is so important to be able to transport the glucose from the digestive tract via the blood to each and every cell in the human body. The **hormone insulin is responsible for carrying glucose over the “wall” of the cell membrane into the cell.**
- If the body doesn't produce sufficient insulin or if the body have insulin resistant cells in the body, the body will not be able to transport glucose over the cell membrane and the body cells will literally “starve” due to a lack of glucose as an energy source. At the same time, the **glucose levels in the blood will rise because glucose is not being removed from the blood and transported into the cells, hence the high blood glucose levels.**
- This can be due to **failure in the formation of insulin at liberation or action.**
- Since **insulin is produced by β cells of the islets of langerhans**, any disease in the **number of functioning cells will decrease the amount of insulin that can be synthesized.**
- Many diabetes can produce sufficient insulin, but some stimulus to the islets tissue is needed.
- During the early stages of the diseases the **insulin like activity (IHA) of the blood is often increased**, but most of the **insulin appears to be bound to protein and available for transport across the cell membranes and action of the cell.**
- The **hormone of anterior pituitary, adrenal cortex, thyroid and α -cells of the islets of langerhans are glycogen.; ie - they increase the supply of glucose possibly**

they could increase the demand, decrease the secretion of antagonise and inhibit action of insulin. The body releases hormones that raise blood glucose level to provide a quick source of energy for coping with stress. During stress conditions diabetes mellitus may precipitate, genetically predisposed, with genetic predisposition.

- **Two kinds of diabetes**
- People suffering from diabetes are usually divided into two categories, namely:
- **1) Insulin-dependent diabetes mellitus, or type 1 diabetes**
- These patients **do not make sufficient insulin** to meet the needs of the body. Type I diabetes is most often diagnosed in **children and adolescents**. Treatment consists of **taking insulin injections, combined with a special diet and controlled amounts of exercise.**
- **Type I diabetes may easily fluctuate from hyperglycemia to Hypoglycemia.**
- **2) Non-insulin-dependent diabetes mellitus, or type 2 diabetes**
- Patients with Type II diabetes **often produce some insulin but in insufficient quantities** to meet the need of their bodies and/or have become **resistant to the insulin** their bodies produce. This type of diabetes is more common in **adults and older people**. In some cases Type 2 diabetes can be controlled by diet alone, while a **combination of oral medications, diet, weight loss and exercise** is used in other cases.

Symptoms: (a) Symptoms associated with uncontrolled, high blood sugar levels

- Weight loss (can occur even if the person is eating well and have a good appetite)
- Excessive Hunger (**Polyphagia**)
- Uncontrollable thirst (**Polydipsia**)
- Increase in urination (**Polyurea**) (without having a bladder or kidney infection)
- Blurred vision
- Bad abdominal pains
- Tendency to develop infections and sores that do not heal quickly or well
- Feelings of exhaustion
- Inability to concentrate
- On the other hand, **blood sugar levels can also drop too low when a diagnosed diabetic does not stick to her / his diet, or skips meals, does physically exhausting exercise, is exposed to various stresses, or uses more insulin medication that is required.**
- **(b) Symptoms associated with low blood sugar levels**
 - Trembling/Sweating
 - Pallor / Fatigue
 - Headache / Loss of concentration

- **In general the symptom of diabetes mellitus are glycosuria, hypoglycaemia, hyperglycaemia, fluid and electrolyte imbalance, acidosis, polyurea, nocturia, polyphagia, polydipsia, dehydration, fatigue and loss of weight, increased excretion of potassium, magnesium and phosphorous etc.**

PRINCIPLE OF DIET

- **Diet should contain low carbohydrate, high protein, low fat especially saturated fats, rather include more of MUFA, PUFA and ω 3 rich fatty acids, Vitamins and minerals and high fibre diet.**
- **One of the most important things to remember if a person have diabetes, is that she / he needsto consult a doctor along with clinical dietitian / Nutritionist and social worker to have an individual diet worked out for her /him , about certain basic information about diabetes, individualized therapeutic diets to keep the glucose level in control .**

Treatment of diabetes

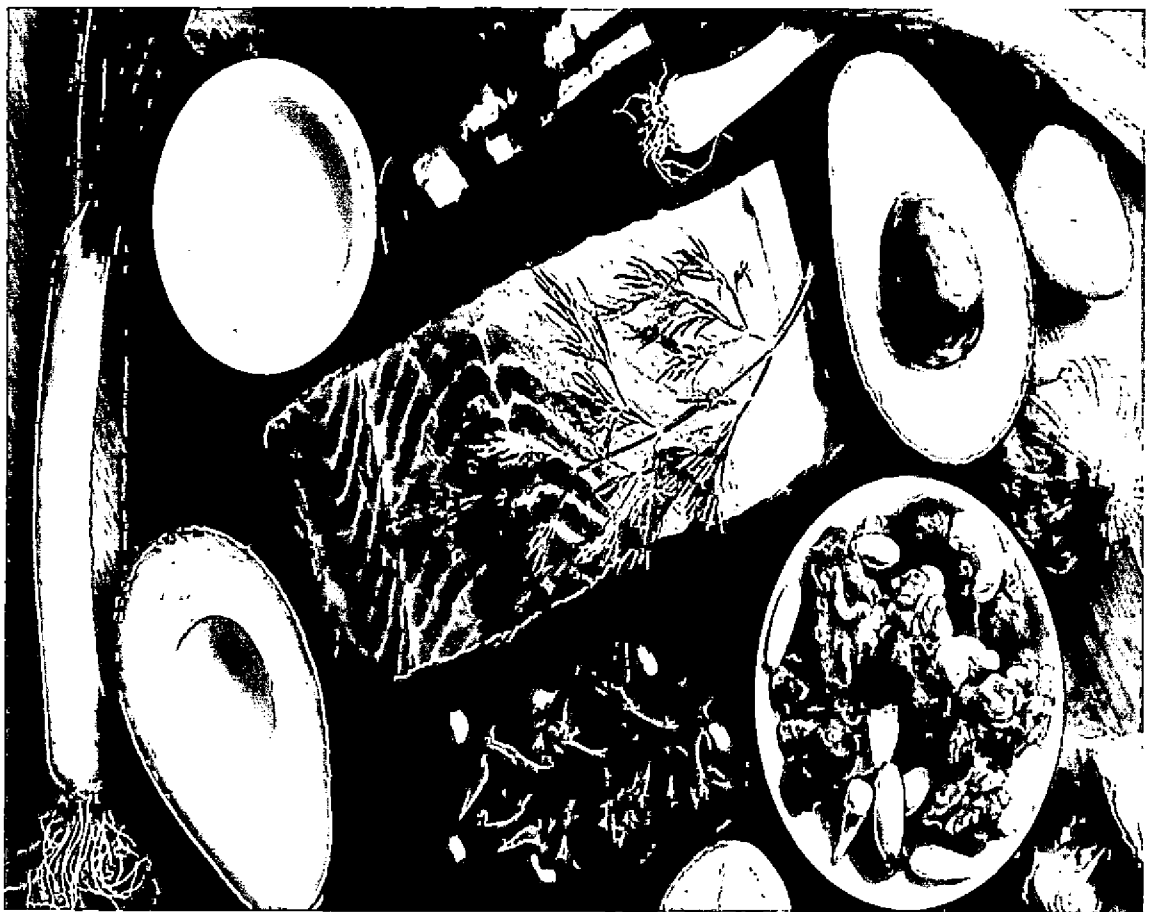
- **Insulin-dependent diabetics need to inject themselves with insulin every day to provide the body with the insulin that is lacking.**
- **Insulin therapy has to be combined with a special diet and controlled amounts of exercise.**
- **Non-insulin-dependent diabetics take oral medications, together with a special diet and controlled exercise.**
- **Obesity is a complicating factor that needs to be treated**
- **If a diabetic is overweight then he or she must try and lose weight by following the instructions of a clinical dietitian / Nutritionist and doing a certain amount of exercise.**
- **The idea is NOT to starve herself / himself or exercise to exhaustion, as such drastic approaches to weight loss can endanger health.**

Basic dietary guidelines for diabetics

The basic principles of the diabetic diet are as follows:

- **Eat a balanced diet**
- **Try and achieve the ideal body weight**
- **Avoid large quantities of sugar and highly processed carbohydrates (cakes, pies, pastries, white rice)**
- **Eat plenty of dietary fibre (brown rice, whole wheat bread, oats, unswifted maize meal, fresh, unpeeled, raw fruits and vegetable, and legumes, such as cooked, dry beans, peas and lentils and meat substitutes made from legumes like soya)**
- **Cut down on saturated fat intake**
- **Eat less salt if accompanied with Hypertension.-**

- **Must keep in mind that the details of the diabetic diet that a person is going to use to have/ to be worked out by a clinical dietitian/ Nutritionist , who will take into consideration the following aspects-**
- **Age and sex, (young people and men usually need to take in more energy)**
- **Level of activity (people who are physically active have increased energy requirements)**
- **Type of diabetes the person have (type I or type II)**
- **Type of medication DM persons are taking (insulin injections or oral medication)**
- **Body weight (over or underweight)**
- **Other complicating factors (kidney disease, hypertension)**
- **The stresses-persons are exposed to (both physical and psychological)**
- **Growth phases (childhood, adolescence, pregnancy, lactation)**
- **Short-term complications (infections, taking part in athletic events, writing exams,etc)**
- **With the correct medication, diet, and exercise, all diabetics should be able to live perfectly normal and happy lives.**



Menu Planning: For Example:

Time	Food Items	Ingredients	Quantity
6.00 am	Tea	Milk	75ml
	Arrow root biscuit	Arrow root powder	10g
8.00 am	Oats Upuma	Oats	60 g
	Apple	Beans	20 g
		Carrot	20 g
		Onion	20 g
		Apple	100 g
10.00 am	Gooseberry Juice	Gooseberry	50 g
1.00 pm	Rice	Rice	80 g
	Fish vattichathu	Sardine	50 g
		Onion	10 g
		Tomato	10 g
	Drumstick leaves	Drumstick leaves	45 g
	Dhal curry	Dhal	20 g
	Cabbage sauté	Cabbage	40 g
	Horse gram thoran	Horse gram	50 g
		Coconut	10 g
		Onion	10 g
	Vegetable Raita	Curd	50 ml
		Cucumber	20 g
		Onion	10 g
3.00 pm		Tomato	10 g
	Masala Kozhukotta	Wheat	30 g

		Carrot	10 g
		Beans	10 g
		Onion	10 g
		Peas	10 g
5.00 pm	Tea	Milk	75 ml
	Guava juice	Guava	100 g
8.00 pm			
	Amaranth chapatti	Wheat	75 g
		Amaranth	45 g
	Egg white curry	Egg	40 g
		Onion	10 g
		Tomato	10 g
9.00 pm		Coconut milk	20 ml
	Spouted pulses	Green gram	20 g
		Cucumber	20 g
	Veg salad	Onion	10 g
	Pineapple	Pineapple	70 g

Calculate the nutritive value of the planned Diabetic Diet: For Example:

Ingredients	Amount (g)/ml	Energy (Kcal)	Protein (g)	CHO (g)	Fat (g)	Fibre (g)
Milk	150 ml					
Red gram dhal	30					
Sardine	50					
Curd	50					
Wheat	105					
Arrow root Flour	10					
Peas	10					
Egg white	40					
Coconut milk	20 ml					
Green gram	20					
Tomato	40					
Drumstick leaves	55					
Amaranth	45					
Cabbage	40					

Cucumber	40					
Apple	100					
Guava	75					
Gooseberry	50					
Pineapple	70					
Horse gram	50					
Coconut	10					
Oil	15					
Total	Example	2120.78	106.61	830.31	40.8	5.28
RDA	Example	2730	60	300	60	40

PORTION SIZE

Food Stuffs	Portion	Amount (g)
Cereals and millets	10	400
Animal food	3	60
Pulses legumes	4	80
Green leafy Veg.	2	200
Other veg.	2	200
Roots & tubers	-	-
Fruits	2	200
Milk	5	300
Fat & oils	5	30
Nuts or oil seeds	4	25

COMPARISON OF NUTRIENTS WITH NORMAL RDA

Nutrients	Normal RDA	Modified RDA
Energy K Cal	2730	2120
Protein (g)	60	60
Visible fat (g)	30	30
Calcium (mg)	600	600
Iron (mg)	17.0	17.0
Vitamin A (μ g)	600	600

Results and Discussion: For example:

Dietary measures are an essential part of the treatment of diabetes patients, whether they are on the diet alone or in sulphonyl urea drug or any other oral hypoglycaemic drugs or insulin. Carbohydrate restriction impairs insulin sensitivity and reversed by high carbohydrate diet. Diet high in protein is good for diabetic because it supplies the essential amino acids needed for tissue repair.

Activity:

- Aim – Special Features – Importance of Diabetic Diet
- Importance of vitamins, minerals and major proximate principles in maintaining healthy life styles among Diabetes Mellitus (DM) – under different types.
- Plan DM diets (Indian / Western)
- How to control DM with diet and exercise alone (criteria)
- How to control DM with diet ,exercise and oral hypoglycaemic drugs
- How to control DM diet, exercise and Insulin (various types)
- Food distribution according to short acting/medium acting /long acting Insulin.(Criteria)
- Importance of Exchange List
- Foods to be excluded / Foods to be eaten moderately / Foods to be taken (plenty)
- Calculate the Food requirement (as per ICMR Classification) and compare it with RDA
- Calculate the Nutrient Contents of the diet planned and compare it with RDA
- Attach Action pictures (preparations of the dishes)
- Original pictures of Diabetes Mellitus patients having their diets (different categories)(Optional)
- Take pictures of Menu prepared for DM (with proper delicious dishes with beautiful Menu Card, presentationsneatly& stylishly on a well laid Table).
- Organoleptic scores of each nutritious & tasty dishes prepared(pictures)

- Prepare tables and graphs
- Evaluate critically on adequacy of the planned diet.
- Apply appropriate statistical tool if needed
- Substantiate your findings with adequate recent scientific studies.
- Collect adequate Review of literature
- References



Exercise No.4

PLANNED DIET FOR A FLATULENCE PATIENT

Aim:

To plan, purpose, serve and evaluate a day's diet for an adult man with flatulence.

Introduction:

- Flatulence is defined as flatus expected through anus.
- It is normal for human to pass flatus through the rectum, although the volume and frequency may vary greatly between individuals.
- It is also normal for intestinal gas passed through the rectum to have a characteristic feculent smell, although this too may vary in concentration.
- There are five general symptoms related to intestinal gas, pain, bloating and abdominal distension, excessive flatus smell and gas insentience.
- One method of reducing the volume of flatus produced is dietary modification
- Reducing the amount of fermentable carbohydrates.
- This is the theory behind diets such as the low **FODMAP** diet (low fermentable oligosaccharide, disaccharide, monosaccharide and polyols.)

MENU PLANNING:

Time	Food Items	Ingredients	Amount (g)
7.00 am	Tea	Milk	100ml
9.00 am	Phulkas (Dry Chapaties-4) Egg curry	Wheat Tomato Onion Egg Coconut milk	100 g 50 10 40 20ml
11.0 m	Watermelon juice	Watermelon	50
1:00pm	Vegetable rice Curd Banana	Rice Beans Carrot Curd Banana	80 20 20 100ml 100
3.00 pm	Oats uppuma Tea	Oats Onion Chilli Milk	60 10 5 100 ml
6.00 pm	Fruit punch	Sugar Orange Lime	5 25 50

8.30 pm	Rice	Sugar	10
		Rice	125
	Amaranth	Amaranth	30
		Coconut	65
		Onion	10
09:00 pm	Fish curry	Sardine	20
		Onion	10
		Tomato	10
	Banana Lassi	Curd	100ml
		Sugar	5
		Banana	25
		Oil for cooking	25

Calculate the nutritive Value of the planned Diet: For Example

INGREDIENTS	AMOUNT (g) /ml	PROTEIN (g)	FAT (g)	DIETARY FIBRE (g)	CHO (g)	ENERGY (Kcal)
Amaranth	30					
Coconut	15					
Sardine	20					
Banana	125					
Oats	60					
Watermelon	50					
Rice	125					
Wheat	100					
Beans	20					
Carrot	30					
Curd	200 ml					
Chilli	5					
Coconut Milk	20ml					
Orange	45					
Lime	15					
Milk	200 ml					
Tomato	30					
Onion	50					
Egg	40					
Sugar	20					
Oil	25ml					
TOTAL	Example	90.147	52.264	138.105	283.397	2282.02 Kcal
RDA	Example	60 g/d	Visible fat 25 g	40 g	300	2320 Kcal

PORTION SIZE

FOOD GROUPS	PORTION (g)	No.of PORTIONS
Cereal and millets	30	12.5
Pulses	30	2.5
Milk and milk products	100	3
Roots and tubers	100	2
Green leafy vegetables	100	1
Other Vegetables	100	2
Fruits	100	1
Sugar	5	4
Fat and Oils	5	5

COMPARISON OF NUTRIENTS WITH NORMAL RDA AND MODIFIED RDA

NUTRIENTS	NORMAL RDA	MODIFIED RDA
Energy (Kcal)	2320	2282.02
Protein (g/d)	60	90.4
Visible fat (g/d)	25	52.64
Calcium (mg/day)	600	600
Iron (mg/d)	17	17
Vitamin A		
Retinol ($\mu\text{g}/\text{day}$)	600	600
B-Carotene ($\mu\text{g}/\text{day}$)	4800	4800

Results and Discussions: (For example):

The diet, to control the production of intestinal gas, is **adequate in calories, protein, minerals and vitamins**. The elimination of certain food groups from the diet still allows a wide variety of food selections. During the early stages of the intestinal gas diet, multi vitamin/ mineral supplement may be recommended.

Activity:

- Aim – Special Features – Importance of therapeutic diet during Flatulence
- Importance of vitamins, minerals and major proximate principles in maintaining healthy life styles among flatulent patients
- Plan a diet for a flatulence patient
- Foods to be excluded / Foods to be eaten moderately / Foods to be taken (plenty)
- Calculate the Food requirement (as per ICMR Classification) and compare it with RDA
- Calculate the Nutrient Contents of the diet planned and compare it with RDA

- Attach Action pictures (preparations of the dishes /Menu)
- Original pictures of Flatulence patients having their diets (optional)
- Take pictures of Menu prepared for Flatulence condition(with appropriate Menu Card, presentations neatly& stylishly on a well laid Table).
- Organoleptic scores of each nutritious & tasty dishes prepared(pictures)
- Prepare tables and graphs
- Evaluate critically on adequacy of the planned diet.
- Apply appropriate statistical tool if needed
- Substantiate your findings with adequate recent scientific studies.
- Collect adequate Review of literature
- References

Exercise No.5

DIET FOR A PRESCHOOL CHILD

AIM:

To plan, purpose, serve and evaluate a day's diet for a preschool Child

Introduction:

- Preschool children need three regular meals and two snacks a day
- They relish the dishes with their parents
- It is important to serve as a good model for child by eating a balanced diet with variety of vegetables and fruits.
- This helps child develop healthy eating habits in early stage
- Food pyramid tells the food groups that one should eat more and what one should eat less.
- By choosing a variety of foods from each food group, it ensures child getting sufficient nutrients.
- Grains provide the body with energy and should be consumed in largest portions.
- Children of this age range need 1.5 to 3 bowls of grains a day.
- Vegetables and fruits contain a wide range of minerals, vitamins, antioxidants and dietary fibre.
- Preschool children need at least $\frac{3}{4}$ bowl cooked vegetables and 1 medium sized fruits a day.
- Children aged 2 years or above can choose calcium fortified soy milk or low fat milk
- Children aged 5 years or above can choose skimmed milk to reduce fat intake
- **The nutritional needs of preschoolers - Special Features :**
- A young child's eating plan should consist mostly of healthy foods –
- Such as lean meats, poultry, seafood, eggs, and legumes
- Whole grains, such as whole-wheat bread and cereals
- At least two servings of dairy foods daily
- Fresh or lightly processed fruits and vegetables
- Preschoolers are at an age when they start to show independence and have a reputation for being fussy eaters.
- Have no fear - good nutrition at this age is still achievable.

All it takes is a little bit of food and nutrition knowledge and, of course, lots of patience.

Preschoolers have an established daily routine and need regular mealtimes to be part of this.

- Parents should provide suitable foods to preschoolers at mealtimes, including morning and afternoon tea.
- It is up to the child to eat from what is offered

- **Food should be attractively presented and should be in bite sizes so that the child can just pick up a bite and put it in their mouth**
- **Unless the food is colourful and attractive, the child would not be interested in trying out the food and would be more interested in continuing his play**
- **After a day at preschool and possibly attending activities in the afternoon, some children will not be hungry at dinner time.**
- **They may have eaten enough during the day at earlier meals.**
- **So make the mealtime a pleasant social time together.**
- **It is an opportunity for parents to show their children appropriate eating behaviours, including eating a variety of foods, tasting new foods, even if the preschooler is not actually eating.**
- **The nutritional needs of preschoolers can be met by offering foods from all the food groups**

What are appropriate foods?

- **Based on recommendations of Indian Council of Medical Research (ICMR) - need to include the following foods in the preschoolers' diet every day:**
- **5-6 servings of cereals (like roti, whole wheat bread rice, pasta, noodles etc)**
- **2-3 servings of milk and milk products like (glass of milk, milk shake, yoghurt, paneer, cheese etc)**
- **1 small portion of meats like chicken, fish, eggs and 1 portion of pulses like lentils, chickpeas, green gram etc**
- **3-4 portions of fruits and vegetables**
- **The amount of food a preschooler chooses to eat will vary according to their size and activity levels.**

What food to send to preschool in Tiffin?

Choose foods from the core food groups

- **Breads or cereal based foods like sandwiches, spring rolls with veggies, sprouts, whole wheat bread with a veggie or egg filling, rolled up, pasta or rice based salad, crackers with a spread, fruit-based muffins**
- **Include a dairy food for lunch or breakfast (eg a cheese sandwich, yogurt, fruit yoghurt, custard)**
- **Firm fresh fruits, as well as dried fruits, are easy to send for morning tea or lunch**
- **Choose easy-to-eat vegetables such as cucumber sticks, celery, carrot sticks and capsicum. Remember to cut them appropriately for small fingers**

- Handy finger foods like cutlets, hard boiled eggs, small sandwiches, rolls, whole fruits are easy to pick up and at school
- **Preschoolers are at an active and growing age**
- **They need their food to be nutrient rich and tasty**
- **The foods provided to the preschooler needs to provide the energy requirement of an active mind and a growing body along with introducing the child to newer foods**
- **Try these nutritious and delicious snack options for your preschooler:**
 - 1/2 sandwich.
 - Well-cooked vegetables and low-fat dip.
 - Whole grain crackers and cheese.
 - Yogurt.
 - Fruit smoothies.
 - Milk.
 - Chopped hard-boiled eggs or scrambled eggs.
 - Dry cereal; cereal with milk

MENU PALNNING: For Example:

TIME	MENU	INGREDIENTS	AMOUNT
7:00 AM	Milk	Milk	75 ml
	Biscuits	Sugar	5 g
8:00 AM	Uthappam	Rice	30 g
		Black gram	15 g
11:00 AM	Tomato Kurma	Tomato	10 g
		Onion	10 g
		Green chilli	5 g
		Grated coconut	10 g
12:30 PM	Egg fried rice	Banana	25 g
		Milk	75 ml
		Groundnut	10 g
		Sugar	5 g
12:30 PM	Egg fried rice	Rice	60 g
		Egg	40 g
		Onion	10 g
		Carrot	10 g
		Spring onion	10 g
		Beans	10 g
	Salad	Cucumber	10 g
		Carrot	10 g
		Onion	5g
		Tomato	5g

		Curd	20 ml
03:30 PM	Amaranth cutlet	Amaranth Potato Onion Bread crumbs Green gram dal	25 g 15 g 10 g 10 g 10 g
	Pomegranate	Pomegranate Milk Sugar	20 g 75 ml 5 g
07:30 PM	Stuffed roll	Chappathi (Wheat flour) Onion Tomato Minced chicken	20 g 10 g 10 g 20 g
08:00 PM	Vanilla Ice cream with fruit salad	Pineapple Mango Grapes Apple Banana Ice cream- Milk Egg Sugar	10 g 10 g 10 g 10 g 10 g 40 ml 40 g 15 g

Calculate the Nutritive Value of the planned Preschool Diet

INGREDIENTS	AMOUNT g/ml	PROTEIN (g)	FAT (g)	FIBRE (g)	CHO (g)	ENERGY (Kcal)
Milk	265 ml					
Sugar	30 g					
Rice	100 g					
Black gram dal	15 g					
Onion	50 g					
Tomato	25 g					
Green chilli	5 g					
Coconut (Grated)	10 g					
Egg	80 g					
Carrot	20 g					
Spring onion	10 g					
Beans	10 g					
Cucumber	10 g					
Curd	20 ml					
Amaranth	25 g					
Potato	15 g					
Pomegranate	20 g					
Wheat flour	20 g					
Chicken	20 g					
Pineapple	10 g					
Mango	10 g					
Grapes	10 g					

Apple	10 g					
Banana	10 g					
Cooking oil	20 ml					
TOTAL	Example	44.16	44.6	19.2	142.8	1051.6
RDA	Example	16.7	27	16.7	-	1060

COMPARISON OF NUTRIENTS WITH NORMAL RDA AND MODIFIED RDA

INGREDIENTS	NORMAL	MODIFIED
Energy (Kcal)	1060	1051.6
Protein (g)	20.1	44.16
Fat (g)	25	27
Iron (mg)	13	13
Calcium (mg)	600	600
Vitamin A		
Retinol (µg)	400	400
B-Carotene (µg)	3200	3200
Riboflavin (mg)	0.8	1.2
Niacin (mg)	11	12
Vitamin C (mg)	40	40

Results and Discussions: For example:

- To prepare a day's menu for a preschool child we followed the dietary guidelines
- The diet is adequate in quantity and quality of different nutrients
- Care has taken to include variety of foods

Activity:

- Aim – Special Features – Importance of Balanced diet during preschool
- Importance of vitamins, minerals and major proximate principles in the proper healthy growth and development of preschool years of crucial devt. Of food likes and dislikes – the foundation food taste development
- Plan a nutritious healthy colourful preschool diet
- Attractive Nutritious Foods – snacks and Juices to be eaten moderately / Foods to be taken (plenty)
- Calculate the Food requirement (as per ICMR Classification) and compare it with RDA
- Calculate the Nutrient Contents of the diet planned and compare it with RDA
- Attach Action pictures (preparations of the dishes /Menu)
- Original pictures of preschoolers having their diets (Optional)
- Take pictures of delicious & colourful Menu / dishes / snacks prepared for preschooler (with appropriate Menu Card, presentations-neatly & stylishly on a well laid Table).
- Organoleptic scores of each nutritious & tasty dishes prepared (pictures)

- Prepare tables and graphs
- Evaluate critically on adequacy of the planned diet.
- Apply appropriate statistical tool if needed
- Substantiate your findings with adequate recent scientific studies.
- Collect adequate Review of literature
- References

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Exercise No.6

DIET FOR A PEPTIC ULCER PATIENT

AIM:

To plan, prepare, serve and evaluate a day's diet for an adult man suffering from peptic ulcer.

INTRODUCTION:

- The term peptic ulcer is used to describe any localised erosion of the mucosal lining of those portions of alimentary tract that comes in contact with gastric juice.
- This integration of tissue can also result in necrosis similar symptoms are produced by the ulcer regardless of its location and response to treatment is essentially same.
- The defence mechanism of gastric and duodenal mucosa is incredibly efficient the mechanical, thermal or chemical results from food are well within its power to deal with.
- No single cause has been found for ulcer.
- However, it's clear that an ulcer is the end result of an imbalance between digestive fluids in stomach and duodenum.
- Most ulcers are caused by an infection with a type of bacteria called Helicobacter pylori and non steroidal and inflammatory drugs.

PRINCIPLE OF THE DIET:

- A bland diet with high calorie of protein, low fat, high vitamins especially vitamin C and low fibre diet is recommended.

MENU PLANNING: For Example:

TIME	MENU	INGREDIENTS	AMOUNT g/ml
6:00 AM	Milk	Milk	100 ml
8:00 AM	Iddli	Rice Black gram dal	100 g 20 g
	Mashed dal	Red gram dal	15 g
	Mango juice	Mango Sugar	80 g 5 g
11:00 AM	Green gram dal	Green gram dal	25 g
	Payasam	Milk Ghee Sugar	150 ml 5 g 10 g
1:00 PM	Well cooked rice	Rice	100 g
	Mashed potato	Potato	100 g
	Veg curry	Cauliflower	20 g

		Bitter guard	20 g
	Baked fish	Onion	20 g
	Curd	Fish	50 g
		Curd	20 g
4:00 PM	Pan cake	Rice flour	30 g
		Milk	70 ml
	Pineapple juice	Pineapple	130 g
		Sugar	5 g
6:00 PM	Vegetable soup	Spinach	80 g
		Potato	50 g
		Beans	30 g
		Carrot	20 g
		Green peas	5 g
		Capsicum	25 g
8:00 PM	Pathiri	Rice flour	100 g
	Stew	Pumpkin	50 g
		Carrot	40 g
		Green peas	5 g
	Boiled egg	Egg	40 g
10:00 PM	Milk	Milk	80 ml
		Sugar	5 g

Calculate the nutritive Value of the planned Therapeutic Diet for Peptic Ulcer

INGREDIENTS	AMOUNT (g)	PROTEIN (g)	FAT (g)	CHO (g)	FIBRE (g)	ENERGY (Kcal)
Milk	400ml					
Rice	230 g					
Black gram	20					
Red gram dhal	15					
Mango	80					
Sugar	15					
Green dhal	25					
Ghee	5					
Potato	150					
Cauliflower	20					
Bitter guard	20					
Onion	20					
Fish	50					
Curd	50					
Pineapple	80					
Spinach	80					
beans	80					
Carrot	40					
Green peas	10					
Capsicum	25					

Pumpkin	50					
Egg	40					
oil	20					
Total						
RDA						

COMPARISON OF NUTRIENTS WITH NORMAL AND MODIFIED R D A.

Nutrients	Normal RDA	Modified RDA
Energy (Kcal)	2320	2332.2
Protein (g)	60	60.71
Fat (g)	25	38.18
Iron (mg)	17	17
Calcium (mg)	600	600
Vitamin A		
B Carotene (micro g)	600	600
Retinol (micro g)	4800	4800
Thiamine (mg)	600	600
Riboflavin (mg)	1.4	1.28
Niacin (mg)	1.6	12.05
Vitamin C (mg)	40	40

Results and Discussion: For example:

- This diet is for a patient with peptic ulcer who is a sedentary adult man
- The diet should be high in protein, calorie and low fat
- While planning the diet, the basic five food groups such as -
- Cereals and millets
- Pulses,
- Milk and milk products,
- Fruits and vegetables and
- Fats are included.
- To reduce the fat contents, skimmed milk is used
- To increase the content of protein, green peas, Bengal gram dal and green gram that are given.
- Weight loss, iron deficiency, anaemia are common in these people
- So far better healing, vitamin C containing rich foods is included

Activity:

- Aim – Special Features – Importance of therapeutic diet during Peptic Ulcer
- Importance of vitamins, minerals and major proximate principles in maintaining healthy life styles among peptic ulcer patients
- Plan a therapeutic diet for a peptic ulcer patient
- Enlist the food to be excluded / Foods to be eaten moderately / Foods to be taken (plenty)

- Calculate the Food requirement (as per ICMR Classification) and compare it with RDA
- Calculate the Nutrient Contents of the diet planned and compare it with RDA
- Attach Action pictures (preparations of the dishes /Menu)
- Original pictures of peptic ulcer patients having their diets (optional)
- Take pictures of Menu prepared for peptic ulcer condition (with appropriate Menu Card, presentations neatly & stylishly on a well laid Table).
- Organoleptic scores of each nutritious & tasty dishes prepared (pictures)
- Prepare tables and graphs
- Evaluate critically on adequacy of the planned diet.
- Apply appropriate statistical tool if needed
- Substantiate your findings with adequate recent scientific studies.
- Collect adequate Review of literature
- References

Exercise No.7

DIET FOR CONSTIPATION

AIM:

To plan, prepare, serve and evaluate a day's diet for an adult woman suffering from constipation.

INTRODUCTION:

- Constipation is the frequent passage of stool which are most often attributed to prolonged rectosigmoid transit.
- Constipation is usually because of diet factors, lack of exercise, use of medication and poor bowel habits
- Approximately 40 % of pregnant woman experience constipation during their pregnancy.
- It's often difficult to identify the exact cause of constipation.
- However, there are a number of things that contribute, including-
- **Not eating enough fibre such as fruit, vegetables and cereals**
- **A change in routine or lifestyle**
- **A change in eating habits**
- **Ignoring the urge of passing stools**
- **Side effects of certain medications**
- **Not drinking enough fluid**
- **Anxiety or depression**
- **About two in every five woman experience some constipation during their pregnancy**
- Constipation is a very common condition that affect people of all ages-
- **Some causes of constipation include:**
- Changes to what you eat or your activities
- Not enough water or fiber in your diet
- Eating a lot of dairy products
- Not being active
- Resisting the urge to poop
- Stress
- Overuse of laxatives
- Some medications (especially strong pain drugs such as narcotics, antidepressants, and iron pills)
- Antacid medicines that have calcium or aluminum
- Eating disorders / Colon Cancers
- Problems with the nerves and muscles in your digestive system
- Neurological conditions such as Parkinson's disease or multiple sclerosis
- Underactive thyroid (called hypothyroid)
- It can mean that they are not passing stools (faeces) as often as normally do or have to strain more than usual or unable to completely empty bowels
- Constipation can also cause stools to be unusually hard lumpy large or small
- The severity of constipation for a short period of time has no lasting effect on health

PRINCIPLE OF THE DIET

- Diet should contain **adequate calories, carbohydrate, protein, fat and vitamins and minerals.**
- Care should be taken to include **high amounts of fibre and fluids**

MENU PLANNING: For Example:

TIME	MENU	INGREDIENTS	AMOUNT (g)/ml
6:00 AM	Tea	Milk Sugar	75 10
8:00 AM	Puri	Wheat flour Oil	75 10
	Bhaji	Potato Onion	75 20
	Banana milk	Banana Milk Sugar	60 100 ml 15g
11:00 AM	Tomato soup	Tomato Onion carrot	30 30 30
01:00 PM	Rice	Rice	100
	Sambar	Red gram dal Tomato Onion Potato	10 10 10 15
	Fish curry	Fish Onion	50 10
	Ladies finger thoran	Ladies finger	50
	Butter milk	Curd	50
	Apple	Apple	40
04:00 PM	Vegetable sandwich	Bread Cheese Onion Tomato Carrot	40 10 25 15 15
08:00 PM	Chappathi	Wheat flour	60
	Egg curry	Egg Onion Tomato	40 20 20
	Fruit salad	Banana Apple Pomegranate Guava	25 25 25 25

		Papaya	25
		Total oil used for cooking	25

Calculate the nutritive Value of the planned Diet: For example:

INGREDIENTS	AMOUNT	PROTEIN (g)	FAT (g)	CHO (g)	FIBRE (g)	ENERGY (Kcal)
Milk	175 ml					
Wheat flour	135 g					
Potato	90 g					
Onion	100 g					
Banana	85 g					
Tomato	75 g					
Carrot	45 g					
Rice	100 g					
Red gram dal	10 g					
Sardine	50 g					
Ladies finger	50 g					
Curd	50 g					
Apple	65 g					
Bread	40 g					
Cheese	10 g					
Egg	40 g					
Pomegranate	25 g					
Grape	25 g					
Guava	25 g					
Papaya	25 g					
Oil	25 g					
Sugar	15g					
TOTAL	Example	66.80	43.95	325.6	40.25	2081.90
RDA	Example	55	20	300	40	1900

COMPARISON OF NUTRIENTS WITH NORMAL RDA AND MODIFIED RDA

NUTRIENTS	NORMAL RDA	MODIFIED RDA
Energy (Kcal)	1900	2057
Protein (g)	55	67
Visible fat (g)	20	25
Calcium (mg)	600	600
Iron (mg)	21	21
Vitamin A		
B- carotene (µg)	4800	4800
Retinol (µg)	600	600
Thiamine (mg)	1.0	1.0
Riboflavin (mg)	14.0	14.0
Niacin (mg)	12	12
Vitamin C (mg)	40	40

Results and Discussions: For Example:

When the prepared diet was compared with ICMR recommended RDA, all the nutrients adequately met. The planned diet contains high amount of fruits and vegetables which provides high fibre and fluid needed by a person with constipation.

Activity:

- Aim – Special Features – Importance of therapeutic diet during Constipation
- Importance of vitamins, minerals and major proximate principles in maintaining healthy life styles among constipation patients
- Plan a diet for a constipation patient
- Foods to be excluded / Foods to be eaten moderately / Foods to be taken (plenty)
- Calculate the Food requirement (as per ICMR Classification) and compare it with RDA
- Calculate the Nutrient Contents of the diet planned and compare it with RDA
- Attach Action pictures (preparations of the dishes /Menu)
- Original pictures of Constipation patients having their diets (optional)
- Take pictures of Menu prepared for Constipation condition (with appropriate Menu Card, presentations neatly & stylishly on a well laid Table).
- Organoleptic scores of each nutritious & tasty dishes prepared (pictures)
- Prepare tables and graphs
- Evaluate critically on adequacy of the planned diet.
- Apply appropriate statistical tool if needed
- Substantiate your findings with adequate recent scientific studies.
- Collect adequate Review of literature
- References

Appendix

READY REKONER FOR MEAL PLANNING AND SERVING						
FOOD	RAW WT.	Cooked Volume	CHO (g)	PRO (g)	FAT (g)	ENERGY K cal
MILK	100 ml	½ cup	4	3.2	4	65
EGG	50 g	1 med	-	6.6	7	85
MEAT	45 g	6-8 small pieces	-	8.3	6	85
FISH	65 g	1 slice	-	14.6	3	85
CHICKEN	70 g		-	19.4	1	85
PULSES	25 g	½ cup	15	5.6	-	85
RICE	25 g	½ cup	20	1.6	-	85
WHEAT	25 g	1 Chapathi	18	3	-	85
RAGI	25 g	½ cup	18	1.8	1	85
VEG-	100 g	½ cup	6-10	1-3	-	30-50
Starchy-ROOTS	100 g	½ cup	15-20	1.5-3	-	85-100
FRUIT	100 g	1	10	-	-	40
PLANTAIN	50 g	1 med	14	0.6	-	58
GROUNDNUT	15 g	30-35 nos	4	3.8	6	85
SUGAR	10 g	2 tsp	10	-	-	40
FAT	10 g	2 1/2 tsp	-	-	10	90
Marie.BISCUITS	10 g	2 No s	7.8	0.7	1.2	45

PRO= PROTEIN
 CHO=CARBOHYDRATE
 1 cup = 200 ml



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