

DAFFODIL INTERNATIONAL UNIVERSITY

DAFFODIL SMART CITY, ASHULIA, DHAKA



INTERNSHIP REPORT ON

DIABETES COMPLICATIONS NUTRITIONAL MANAGEMENT AT BIRDEM GENERAL HOSPITAL

Submitted By

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*This Report Presented in Partial Fulfillment of The Requirements for the Degree of
Bachelor of Nutrition and Food Engineering*

LETTER OF TRANSMITTAL

Date: 14.02.2023

To
Dr. Nizam Uddin
Associate Professor & Head In-Charge
Department of Nutrition and Food Engineering
Faculty of Allied Health Science
Daffodil International University

Subject: Submission of internship report.

Dear Sir,

I am here by submitting I may internship report on “**Diabetes Complications: Nutritional Management at BIRDEM General Hospital**” which is significant for the NFE program curriculum. Now, I would like to Thank you so much for the direction, advice and support you have given to this report and it is a significant achievement to work under your supportive supervision. I have got the opportunity to work in BIRDEM General Hospital for 30 days. It’s difficult to complete this report without your supervision.

This internship has given me both academic and practical exposure. I learned about the management of diabetes, diabetes patients with other complications diet chart, dietary guidelines and nutritional assessment.

I shall be highly obliged if you are kind enough to receive this report and provide your valuable judgment.

Sincerely yours,



Noushin Saiyara Punni
ID: 191-34-929
Nutrition and Food Engineering
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LETTER OF AUTHORIZATION

To
Dr. Nizam Uddin
Associate Professor & Head In-Charge
Department of Nutrition and Food Engineering
Faculty of Allied Health Science
Daffodil International University

Subject: Letter of Authorization.

Dear Sir,

I am Noushin Saiyara Punni genuinely declare that, this internship report I masterminded is certainly is not a copy from some different reports or articles.

Exactly what I understand and saw is formed here from my experience. I moreover declare that it will not be submitted to other individual in future.

Sincerely yours,



Noushin Saiyara Punni
ID: 191-34-929
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LETTER OF APPROVAL

I am pleased to certify that the project report on “Diabetes Complications: Nutritional Management at BIRDEM General Hospital” prepared by **Noushin Saiyara Punni** bearing **ID: 191-34-929**, of the Department of Nutrition and Food Engineering, Daffodil International University has been approved for presentation and defense/viva-voice.

I am pleased to hereby certify that the data and finding presented in the internship report are the authentic work of **Noushin Saiyara Punni** bearing **ID: 191-34-929**, I strongly recommend the internship report to be presented by **Noushin Saiyara Punni** for further academic recommendations and defense/viva voce. **Noushin Saiyara Punni** bears a strong moral character and a very pleasant personality. It has indeed a great pleasure working with her. I wish her all success in life.

Signature

Shamsur

.....

Mr. Md. Shamsur Rahman

Lecturer

Department of Nutrition and Food Engineering (NFE)

Faculty of Allied Health Sciences

Daffodil International University

LETTER OF RECOMMENDATION

This is to certify that the internship report entitled “**Diabetes Complications: Nutritional Management at BIRDEM General Hospital**” which is submitted for assessment to the examination committee by **Noushin Saiyara Punni** bearing ID: 191-34-929, Department of Nutrition and Food Engineering (NFE), Daffodil International University (DIU).

I am pleased to declare that this report is entirely written by the author and all the related works have been conducted by the intern under my strong supervision and observation. This is a piece of original work and has not been submitted or published anywhere for any other purpose. I strongly recommend the approval of the report by the authority and I also pursue a positive and fair evaluation of the work.

I wish her all the success in life. Yours sincerely

Shamsur

Mr. Md. Shamsur Rahman
Lecturer

Department of Nutrition and Food Engineering (NFE)
Faculty of Allied Health Sciences
Daffodil International University

Dr. Nizam Uddin
Associate Professor & Head In-Charge

Department of Nutrition and Food Engineering
Faculty of Allied Health Science
Daffodil International University

Acknowledgment

First and foremost, I would want to thank Almighty Allah for giving me the opportunity to finish the Internee report. I received a fantastic chance for learning and personal growth during my internship at BIRDEM General Hospital. I met a lot of nice and talented individuals that helped me a lot throughout this time.

*In particular, **Mr. Md. Shamsur Rahman**, my supervisor at Daffodil International University's Department of Nutrition and Food Engineering, and **Dr. Md. Bellal Hossain**, our Honorable Associate Dean and Professor, as well as **Dr. Nizam Uddin**, Associate Professor & Head In-Charge helped me to coordinate my intern and write this report with their advice, stimulating suggestions, and encouragement.*

I must express my sincere appreciation to Joint Director (administration) sir for accepting this internship and letting me finish my internship at BIRDEM General Hospital, with all due respect and admiration.

*In spite of the fact that she was extremely busy, my internship coordinator, **Quamrun Nahar, PhD (Principal Research Officer, BIRDEM)**, was kind enough to give me some of her valuable time and the opportunity to gain new knowledge. I would like to take this opportunity to express my sincere gratitude to her.*

I would like to extend my sincere gratitude to the Honorable Head of the Department of Nutrition and Food Engineering as well as to my supervisor for setting up all the necessary resources to facilitate my internship training.

Last but not least, I want to convey my sincere gratitude to all of the patients for their helpful assistance.

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CHAPTER ONE

1.1 INTRODUCTION

Diseases caused by dietary deficiencies or metabolic diseases are the primary focus of clinical nutrition, which is a subfield of nutrition science. Also included in the realm of dietary conditions are medical facilities such as hospitals and other health care facilities that provide nutrition or nutrition therapy to patients with a broad variety of medical ailments, as well as nutritional conditions for the patients and their loved ones.

Poor eating habits, or the failure to form and maintain healthy eating patterns over time, have been linked to a wide range of current health problems. Reason number one why so many people suffer from diseases like diabetes, obesity, and kidney failure. Liver conditions such as cirrhosis, hepatitis, etc. Thus, it is possible to prevent such diseases by choosing healthy foods.

Diabetes mellitus is a group of diseases that prevent the body from responding normally to glucose (blood sugar). Muscle cells get most of their energy from the glucose in the blood. Essential for staying in excellent health. Similarly, our brains rely on blood flow for sustenance. Food is where it all begins for us. With the help of the pancreatic hormone insulin, glucose may enter cells and be used for energy production. Therefore, there are occasions when the body doesn't create enough insulin or doesn't properly use the insulin it does make. As of Global Health Days 2016, the World Health Organization estimated that 422 million people worldwide had diabetes. More than 80% of diabetes-related deaths occur in low- and middle-income countries. The vast majority of those who suffer from diabetes live in low- and middle-income nations. They also found that 8.0% of the population had diabetes.

In 2016, diabetes affected 12.8% of the population of Bangladesh, and it was a factor in 3% of all fatalities there. There seems to have been an upward trend in the prevalence of diabetes mellitus among Bangladeshis. The effects of diabetes may manifest in a variety of ways, causing distress for those who suffer from the condition. A person's risk for complications from diabetes increases if they have the disease for a long time or if their blood sugar levels aren't managed properly. Heart disease, kidney failure, nerve damage, vision loss, foot and skin problems, and even mental health issues may all be caused by diabetes. This suggests that these problems may be manageable with the help of medication, diet, exercise, and glucose control.

My internship was short and purposeful. Because of its stellar reputation as a pioneer in clinical nutrition and dietetics in Bangladesh, I decided to do my internship at BIRDEM Hospital.

1.2 REPORT ORIGIN:

There is an internship requirement for Daffodil International University's nutrition and food engineering students. It is the last stage of a student's academic career. Our bachelor's degree is now complete, and we have a bright future ahead of us thanks to this internship program. So, as a student of nutrition and food engineering, we must choose a reputable hospital or industry-related institution for training that is necessary to fully understand a subject learned via formal education. I thus choose BIRDEM General Healthcare for my internship program since I am interested in the hospital industry for this reason. The application of theoretical research and academic training do in fact vary significantly in the practical world of contemporary feeding wellness. Therefore, this actual activity may allow me to fill up the knowledge gaps.

This article focuses on one of the program requirements for the B.Sc. in Nutrition and Food Engineering. My report is titled "**Diabetes Complications: Nutritional Management at BIRDEM General Hospital**" and its major goal is to examine how the hospital manages its patients and how it addresses nutritional issues in order to learn how I might improve these aspects of my own care in the future.

1.3 INTERNSHIP OBJECTIVES

My long-term goal is to complete all requirements for my department in order to get a bachelor's degree after graduation. My main reason for choosing this particular school is because I am interested in pursuing a career in medicine and would really benefit from having some practical experience in a hospital environment. I can now add practical experience to my academic knowledge.

This internship seeks to provide participants practical experience in the areas of sickness management and nutrition planning, both of which are crucial to providing patients with enough nutrition and nourishing food, & satisfy the requirements for the Bachelor of Science in Food and Nutritional Engineering.

CHAPTER TWO

2.1 BIRDEM OVERVIEW

A specialized private hospital in Bangladesh for people with diabetes is called BIRDEM. One of the top hospitals in Bangladesh is this one. In 1980, Dr. Mohammad Ibrahim created the company.

Located in Shahbag, Dhaka, the Bangladesh Institute of Research and Rehabilitation in Diabetes, Endocrine, and Metabolic Disorders is more often referred to as BIEDEM. It used to just treat diabetic patients, but today it treats patients from various specialities and is called as BIRDEM General Hospital. It is a facility for tertiary care. It has grown into a complex with 16 stories and more than 600 apartments. The outpatient department of BIRDEM saw 3000 patients per day. This hospital treats more diabetes patients than any other in Bangladesh.

Professor Dr. Mohammad Ibrahim (1911–1980) led a group of committed colleagues to found the diabetic Association of Pakistan in 1956, which later changed its name to the diabetic Association of Bangladesh (abbreviated BADAS in Bangladesh) and was followed by the establishment of BIRDEM-2 in 2012 at a time when people still believed that diabetes was a disease of the wealthy.

In 1986, the BIRDEM academy was founded. In addition to post-graduate courses on topics like general surgery, medicine, gynecology and obstetrics, etc., the Academy offers certificate and degree programs including M.Phil., MD and PhD, DEM in Endocrine Medicine.

2.2 VISION

- ❖ "No diabetic person must die in Bangladesh without food, without medical care, or without a job."
- ❖ "Medical care shall be made available to all people at a fair price"

2.3 MISSION

- ❖ To provide comprehensive medical treatment, including rehabilitation, to all diabetics via the many institutions of the Diabetic Association of Bangladesh, regardless of gender, economic situation, or social standing.
- ❖ Develop specialized, high-caliber human resources (researchers, scientists, doctors, nutritionists, technicians, and other associated personnel) and broaden this service to provide BADAS Health care at reasonable costs to the whole Bangladeshi population.

- ❖ To cultivate leadership in healthcare via a committed, open-book management structure and high-quality pharmaceuticals and healthcare supplies.
- ❖ To provide all diabetes patients with comprehensive medical treatment, including rehabilitation, irrespective of gender, social background, or financial situation.
- ❖ By spending money on these services, it will be possible to give all Bangladeshis with affordable BADAS medical care via self-sustaining institutions.
- ❖ To develop top-notch nutrition and medical supplies for all diabetes people.
- ❖ To build medical care management via a thorough and integrated management system. To produce high quality specialized workforce (physicians, technicians, research scientists, associate workers, and nurses).

2.4 FACILITIES & SERVICES

In BIRDEM General Hospital, there are many services and facilities for their patients. These are:

- ❖ Out Patients Department (OPD)
- ❖ Indoor Service (IS)
- ❖ General Ward (GW)
- ❖ Cabin
- ❖ Intensive Care Unit (ICU)
- ❖ Coronary Care Unit (CCU)
- ❖ High-dependency unit ((HCU)
- ❖ Operating theater (OT) / Post-Operative
- ❖ Medical Emergency (ME)
- ❖ Surgical Emergency (SE)
- ❖ Radiology and Imaging
- ❖ Blood Bank

2.5 INTERNSHIP JOINING PROCESS

I initially spoke with my supervisor, **Mr. Md. Shamsur Rahman**, *Lecturer, Dept of NFE, DIU* about joining BIRDEM General Hospital as an intern student. In order to learn more about the joining procedure, I then followed his advice and visited the BIRDEM General Hospital. Regarding my internship, my supervisor sent a letter of application to the Director Sir. I went to the hospital to get my ID card after receiving confirmation from Director Sir in a letter a few days later. I encountered all different kinds of patients while working inside.



CHAPTER THREE

3.1 ACTIVITIES

I was engaged in the indoor division throughout my internship. I encountered all patient kinds in the indoor area. Throughout the course of my internship, my supervisor **Quamrun Nahar Ma'am** constantly instructed me on how to deal with patients, their issues, and their various requirements. As my subject is a diabetic patient with CKD, stroke, and electrolyte imbalance issues. I thus encountered a lot of these patients.

3.2 DAILY OBSERVATION

At 2:00 pm, I began my daily ward visit, which included the whole unit. Every intern is required to visit each and every unit. I spoke with the patients as I circled the wards to learn about their present conditions, dietary requirements, and problems, and I recorded that information. Additionally, keep an eye on their diet log in their documents. After keeping an eye on their nutrition and health, I made a point to go to my boss about the issues.

3.3 MANAGEMENT OF THE PATIENTS

All patient kinds come to the BIRDEM General Hospital to get care. All of the nurses I saw in those wards were really helpful in providing assistance for the patients when I visited. I witnessed diabetes individuals who also had CKD, CVD, infections in their feet and eyes, and other chronic conditions. Nutritionists provide patients with diet charts and advise them on correct nutritional plans in response to their complications. They keep an eye on their patients every hour and provide the right drugs as necessary. They get food from nurses in accordance with their diet plans, and the meals are always delivered on schedule. Doctors and nutritionists follow up with patients every three hours apart.



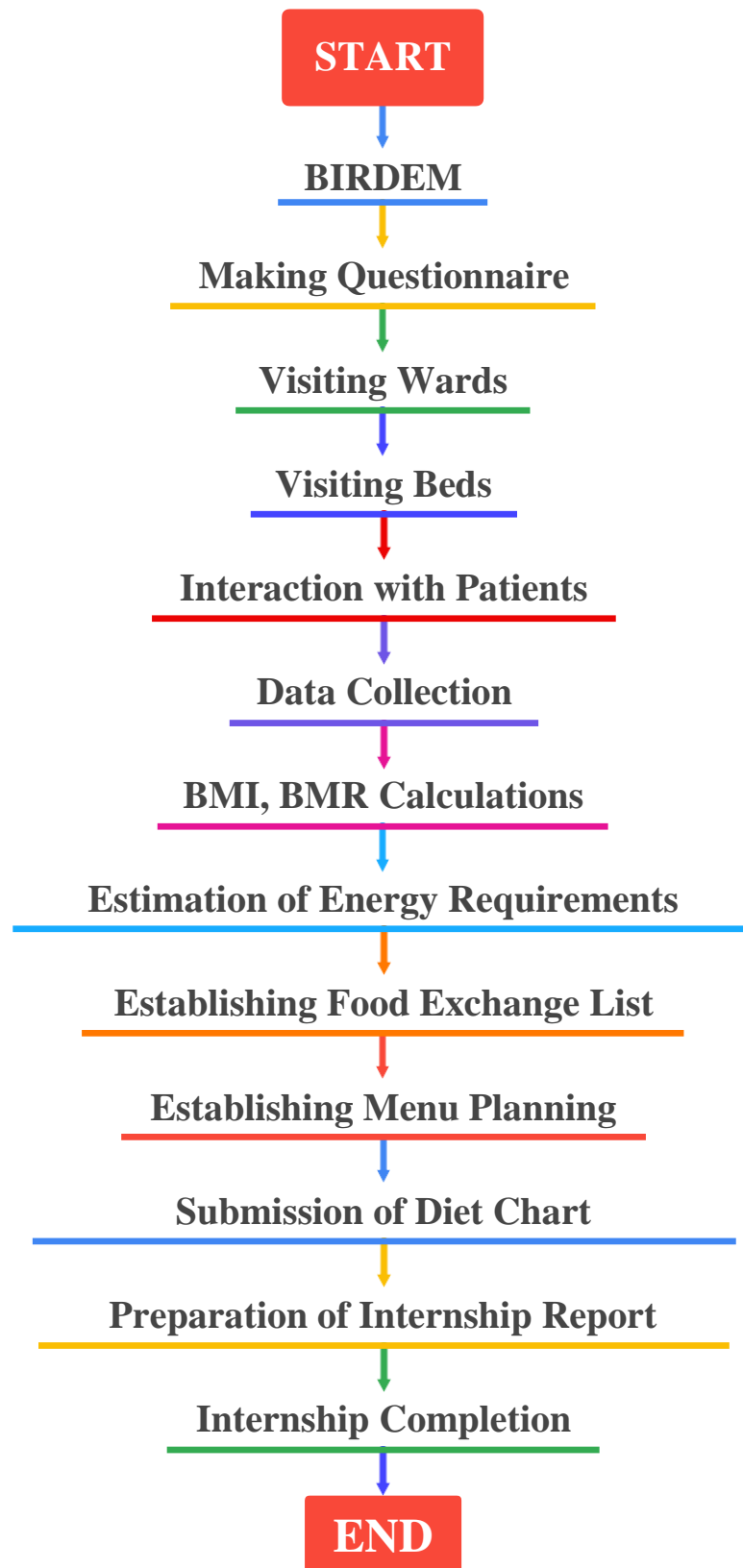
Figure: Patient's Data Collection

3.4 PARTICULAR OBJECTIVES

- ❖ To get greater knowledge about the health sector's operational actions.
- ❖ To increase the meager understanding of the health system.
- ❖ To have a better understanding of diabetes and its ongoing problems.
- ❖ To learn more about the dietary recommendations for nutrition.
- ❖ To gain knowledge about how doctors handle patients and how they observe them.

3.5 FLOW-DIAGRAM

This internship at BIRDEM General Hospital can be summarized using the following flowchart:



CHAPTER FOUR

4.1 SUBJECTS OF STUDY

The following are things I've learnt throughout my internship:

- ❖ Diabetes
- ❖ Enteral and Parenteral Nutrition
- ❖ chronic kidney disease (CKD)
- ❖ Infant Feeding and Breast Feeding
- ❖ Pregnancy
- ❖ Obesity
- ❖ Liver Disease and Nutrition
- ❖ Arthritis and Bone Health

4.2 DIABETES

When our blood glucose level, also known as blood sugar, is too high, we get diabetes. Our primary energy source is blood sugar, often known as glucose, which originates from the food we consume. The pancreas produces the hormone insulin, which facilitates the uptake of glucose from meals into our cells for use as fuel. Sometimes our body doesn't produce enough insulin or uses it poorly. After then, glucose remains in our blood and does not enter our cells.

There are several forms of diabetes:

1. Type - I Diabetes
2. Type- II Diabetes &
3. Gestational Diabetes.

4.2.1 Type - I Diabetes

Humans cannot produce insulin because the insulin-producing cells in our pancreas are attacked and destroyed by our immune system. Although it may occur at any age, type I diabetes is often diagnosed in children and young adults. People with type I diabetes must take insulin daily to be alive.

4.2.2 Type - II Diabetes

Insulin production and use are poor in humans. Diabetes type II may start to develop at any age, even in infancy. However, this kind of diabetes is the most prevalent and most often affects middle-aged and older adults.

4.2.3 Gestational Diabetes

Some women experience this kind of diabetes during pregnancy. After the baby is delivered, this kind of diabetes often disappears. However, if a woman has experienced

gestational diabetes, she is more likely to acquire type II diabetes in the future. Type II diabetes may sometimes be detected during pregnancy.

4.2.4 Blood Sugar for Diabetes (Test):

FBS (Fasting Blood Glucose)

For a diabetes test, you have to go without food for 8–14 hours. But water is fine to drink. And you should eat 150g of CHO at least 3–4 days before this test.

If the result is more than 7, it means the person has diabetes. If the result is less than 6.1, it means the person does not have diabetes. If the result is 6.8, it means the person is imperial fasting.

OGTT (FBS + 2hr GT)

Mix 75 g of glucose into 250 ml of water and drink it. After 2 hours, have your blood checked. If the result is > 11.1 , it means you have diabetes, but if it is 7.8, it means you are healthy.










HbA1c

If the number is over 6.5, the person has diabetes.

Random




If the result is > 11.1 , it means you have diabetes. If the result is 6.1, it means you don't have diabetes. If the two middle numbers were the same, the person would have diabetes or not.

So, for a diabetic patient, firstly checking different types of reports. These reports are-

-  Blood sugar
-  HbA1C
-  Lipid profile
-  Blood pressure
-  Kidney disease
-  Creatinine test.
-  Electrolytes (Na+, K+, Ca+, etc.)
-  Height & weight
-  Typhon

Second, determine what things you should consume or avoid eating.

Avoid:

-  Simple CHO, sugar, free sugar, honey Horlicks, cola, and soft beverages, for example.
-  Complex carbohydrates, dietary fiber, and unsaturated fats were added.
-  Olive oil and additional nuts and fish oil.

Thirdly, verify the timing of your meals by: Manually timing your meals so that there is a 2-hour gap between them.

Fourth, monitor food consumption and food exchange, such as by:

✚ 30g of chapati = ½ cup of rice

But for children with diabetes, CHO, proteins, and fat should be kept in balance throughout the day. If the kid is deficient in any nutrients, such as calcium or iron, they should be given supplements, such as iron tablets.

For patients with gestational diabetes, 350 more calories were added to their daily intake throughout the first, second, and third trimesters of pregnancy. However, throughout the second and third trimesters, protein should be increased by 100g while CHO should be decreased. If a woman has obesity, 350 Kcal should not grow into the third trimester after the second trimester.

4.3 ENTERAL AND PARENTERAL NUTRITION SUPPORT

Parenteral and enteral nutrition assistance are both artificial. Patients with malnutrition or those who should not or cannot accept oral feedings or fluids are fed using one of these two feeding techniques.

4.3.1 Enteral Nutrition

Enteral feeding involves the use of tube feeding and oral supplements to give nutrition to the gastrointestinal system.

- I. Nasogastric Tube
- II. Nasojejunal Tube
- III. Gastrostomy Tube &
- IV. Jejunostomy Tube

4.3.2 Parenteral Nutrition

Total parenteral Nutrition (TPN) is a technique that administers fluids, carbohydrates, electrolytes, amino acids, vitamins, lipids, and minerals directly into a vein without using the digestive system.

Peripheral parenteral nutrition, or PPN, is a supplement that patients utilize when they already have access to another source of nourishment. However, the most crucial factor

in enteral nutrition is the variety of foods that are fed to patients or the precise measurement of food throughout the feeding process.

Therefore, enteral feeding refers to a patient's liquid meal. There are three ways to make a liquid diet:

- (1) Natural liquids such as fruit juice, milk, water, and green coconut water
- (2) Blended food – All items are consumed in accordance with a typical diet.
- (3) Formula food sold in stores

Be mindful that there are several feeding guidelines:

- ✚ Diet chart must accurately reflect the patient's condition and ailment.
- ✚ Feeding interval: every two hours
- ✚ Before checking the patient's electrolytes, give them food, making sure to choose meals that will pass readily down the pipe.
- ✚ Add sugar and oil if the patient does not have diabetes; if they do, just add oil (this procedure just use of nasogastric tube)

4.4 CHRONIC KIDNEY DISEASE (CKD)

Human kidneys with chronic kidney disease (CKD) are damaged and unable to filter blood as well as they should.

The primary risk factors for kidney disease are:

- ✚ Diabetics
- ✚ Elevated Blood Pressure
- ✚ Heart Condition
- ✚ Kidney failure is a genetic trait.

Chronic kidney disease (CKD) often worsens gradually, and symptoms may not show up until the kidneys are severely damaged.

There are one or more of the following symptoms when kidneys are beginning to fail:

- ✚ Muscle cramps
- ✚ Itching
- ✚ Vomiting and nausea
- ✚ Not to enough urine or too much urine.
- ✚ Swelling n feet and the ankles
- ✚ Trouble catching to breath
- ✚ Sleeping trouble
- ✚ Not to feel hungry

If kidney stop working suddenly, may notice one or more of the following symptoms:

- ✚ Back Pain
- ✚ Fever
- ✚ Vomiting

- ✚ Rash
- ✚ Abdominal pain (Belly)
- ✚ Nosebleed

The two most frequent factors leading to CKD, or chronic kidney disease, are diabetes and high blood pressure. So, keep both under control by limiting and avoiding harmful meals and beverages. In order to avoid diabetes, high blood pressure, and renal disease, as well as to help keep them under control, a healthy lifestyle is necessary.

For CKD patients-

- ✚ Protein must be limited.
- ✚ Protein levels must be high in dialysis patients.
- ✚ Protein should be replaced with carbohydrates and oil, and if the patient has a cardiac condition, cholesterol-containing foods should be avoided.
- ✚ Vegetables with calcium and iron are permitted but not required. Protein foods are permitted.
- ✚ Maintain electrolytes and avoid smoking, cigarettes, and alcohol.
- ✚ And having frequent check-ups with the doctor and always following the doctor's directions.

4.5 INFANT & BREAST FEEDING

Breast feeding is the practice of feeding an infant, baby, or young kid milk from a woman's breast. There are differences in breast feeding-

4.5.1 Exclusive Breast feeding

Exclusive Breast feeding refers to a baby receiving solely breast milk from a woman's breasts from the age of 0 to 6 months. However, within one hour of delivery, the newborn infant should be breastfed. Breast feeding should begin during the first hour of a newborn infant's life because milk includes colostrum, which is generated by the mammary glands of animals and contains antibodies to protect the newborn baby against numerous diseases.

4.5.2 Complementary feeding

Complementary feeding refers to the process of starting breast milk feeding alone, which is no longer sufficient to meet the nutritional requirements of a baby or infant. During this time, children are at high risk of malnutrition, so nutrient foods and liquids are often required in addition to breast milk complementary feeding, beginning around the age of 6 months. So, by 6 months of age, the infant should be eating solid meals and drinking liquids in addition to breast milk.

Breast feeding provides several advantages for both the infant and the mother. Benefits for the mother include uterine shrinking and reduced postpartum depression.

4.5.3 Important of breastfeeding

- ✚ Breast feeding reduces the incidence of respiratory tract infections.
- ✚ Breastfeeding reduces the risk of asthma, type 1 diabetes, and food allergies.

- ✚ Breast feeding also improves cognitive development and lowers the incidence of adult obesity.
- ✚ Reduce the likelihood of diarrhea developing.

4.6 PREGNANCY

Pregnancy is divided into three trimesters:

1. 1st trimester
2. 2nd trimester &
3. 3rd trimester

Each trimester lasts around 9 months. Childbirth normally happens about 40 weeks after the start of the last menstrual period and lasts slightly over nine months, with each month averaging 30 or 31 days.

4.6.1 Symptoms of pregnancy:

- ✚ Tender the breasts
- ✚ Missed the periods
- ✚ Vomiting and nausea
- ✚ Time by time hunger
- ✚ Frequent urination

4.6.2 Complications of pregnancy:

- ✚ High blood pressure of the pregnancy.
- ✚ Miscarriage
- ✚ Gestational diabetes
- ✚ Iron deficiency anemia
- ✚ Vomiting and severe nausea

For the virus that causes abortions during pregnancy, torch infection. A pregnant lady goes through various physical changes. Similar to this, breast alteration includes enlarging the breasts and causing breast fat to accumulate.

- ✚ Nipple and areola change. Areola has depth.
- ✚ Boost the vascularity.
- ✚ Pregnancy makes women's skin seem dark.
- ✚ The forehead has dark patches.
- ✚ Several specks around the eyes.
- ✚ Changing belly size and weight

4.6.3 Weight Increase During Pregnancy

Do not gain weight regularly or lose weight throughout the first trimester. However, a casual 1kg increase in weight occurs each month.

Weight increase of 1 kg in the first trimester and 5 kg in the second trimester for a healthy woman (single pregnancy).

A weight increase of 5 kg throughout the third trimester and the second. So, a mother or woman gained a total of (1+5+5+5) kg, or 11 kg, during a single pregnancy.

4.6.4 Reproductive (Organ) weight increase

- ✚ Fetus: 3.3 kilogram; placenta:.6 kg
- ✚ Uterus-.9kg
- ✚ Fat accumulation:3.5 kg
- ✚ Breast:.4 kg

4.6.5 Net weight increase in the mother:

- ✚ Blood weight: 1.2 kilogram
- ✚ 1.3 kg of external fluid

Weight increase is typically monitored monthly. If weight increase is growing by 0.5 kg per week and 2 kg every month, then is considered fast weight gain. The most important information on BMI before, during, and after pregnancy. The weight increase would be 7 kg and not more if the BMI was 30. In this case, the weight increase would be 18 kg if the BMI is 19.

Raising total plasma protein while lowering albumin during pregnancy. Midway during pregnancy, blood pressure and cardiac output both increases. So, maintaining a normal blood pressure. Both the production of insulin and β -cells are elevated. Increasing the hormones prolactin, estrogen, and progesterone

4.6.6 Calcium metabolism

28g or more of calcium every day throughout the trimester is necessary. Thus, 1-1.5g per day are required. Avoid these foods entirely since they may cause hypertension. as salt. Foods high in sodium should be avoided. Eat additional protein if you lose protein. consuming folic acid daily (1mg). If folic acid levels drop, a baby's brain will not grow normally. Eat iron and calcium at different times. So, because there is a two-hour time difference, you should have your iron at 8:00 am and your calcium at 10:00 am. A total of 4 pills will be consumed in 24 hours, with a 12-hour break between the meals of 2 tablets (Iron and Calcium). consuming increasing amounts of water and nutrient-rich meals.

4.6.7 PCOS, or polycystic ovarian syndrome

Affects 6–15% of women of reproductive age during pregnancy. If a woman has PCOS, becoming pregnant could be challenging. If a woman is able to become pregnant, she runs the chance of having greater difficulties during labor and delivery. Therefore, polycystic ovarian syndrome refers to an ovary with numerous cysts.

For PCOS, the ratio of luteinizing hormone (LH) and follicle stimulating hormone (FSH) changes, and testosterone hormone is elevated. for insulin resistance to occur. So, if you have insulin resistance and GDM, don't regulate your food. If GDM is present, insulin will be administered along with a reduction in meals high in carbohydrates. to check your blood sugar every three months. Blood pressure during pregnancy will rise after 20 weeks.

Premature delivery is a serious issue. There is nothing to worry about if albumin passes through the urine with it, but if albumin passes through urine that is 2+, there is cause for concern.

4.6.8 PCOS diet

- ✚ Stay well clear of processed sugary foods.
- ✚ No additional calories are needed throughout the first trimester.
- ✚ The daily increase was 300 Kcal in the second trimester.
- ✚ Increased by 500 Kcal per day throughout the third trimester.
- ✚ Should consume meals high in Omega-3 fatty acids.
- ✚ Whichever animals are consuming veggies, their protein is healthy to consume.
- ✚ Eat more foods high in fat and lipids, such as nuts, milk, eggs, and meat.
- ✚ Low GI CHO and refined CHO should be avoided.
- ✚ Calcium and vitamin D consumption.
- ✚ Eat iron if you notice a lack of it.

4.7 OBESITY

Obesity is a medical disorder that develops when a person weighs too much or has too much body fat, both of which may be harmful to their health. A person's chance of getting a range of health issues, such as arthritis, certain forms of cancer, metabolic syndrome, etc., may rise if they are obese or overweight. Therefore, high blood pressure, type 2 diabetes, and cardiovascular disease are all part of metabolic syndrome.

Obesity is often brought on by dehydration. An excessive quantity of water consumption lowers blood pressure and electrolytes, which causes weakness and dizziness. As a result, people consume more food and more food that makes them ill. So be sure to hydrate yourself everyday. Consume 1.5 to 3.5 liters (6 to 14 glasses) of clear, pure water. Likewise, sip on green coconut water and fresh fruit juice.

Obesity is primarily and often caused by

- ✚ an excess of food intake compared to energy expenditure.
- ✚ high calorie meal consumption.
- ✚ high consumption of fatty and greasy foods.
- ✚ family background
- ✚ Exercise, running, dancing, and outdoor activities abruptly come to an end.
- ✚ Highly consuming or unrestrained preference for fast food or deep-fried foods.
- ✚ After surgery, treatment.
- ✚ with drug-induced obesity as a side effect.

- ✚ Long stretches of time spent napping, leading a relaxed lifestyle, working entirely while seated.

There are two obesity hormone-

- ✚ **Leptin hormone:** Adipose tissue fat cells release leptin. Low food intake is caused by the regulation of energy balance in long-term safety hormone,
- ✚ **Ghrelin hormone:** Increases appetite and is a fast-eating hormone that is secreted by the live stomach.

Table-1: Obesity classification with BMI

Classification BMI	Kg/m ²
Under weight	<18.5
Normal	18.5-24.9
Overweight	25.0-29.9
Obesity Class-I	30.0-34.9
Obesity Class-II	35.0-39.9
Extreme Obesity Class-III	>40.0

4.7.1 Diet for obesity

For CHO

- ✚ Low GI meals should be consumed by obese people.
- ✚ CHO, fruits, and vegetables were low GI foods.
- ✚ Additionally, consume GI foods like fish, meat, oil, green leafy vegetables, dal, and milk, among others.
- ✚ Avoid rice, refined CHO, flower, and sugar.
- ✚ Take whole grain bread, complex carbohydrates, brown rice, foods strong in fiber, fruits, and potatoes.

For Protein

- ✚ Avoid full-fat milk and yogurt, cheese, organ meat, marbled and fatty meat, hot dogs, and canned sausages.
- ✚ Low-fat milk or skim milk, low-fat yogurt, egg white, fish, white meat, soybeans, and soymilk (only for adults) should be consumed instead.

For fat

- ✚ Healthy fats should be consumed, whereas bad fats should not.
- ✚ Olive oil, soybean oil, sunflower oil, and margarine must be consumed.
- ✚ Mayonnaise, butter, and ghee should not be consumed.

- ✚ Essential fatty acids such omega-3 fatty acids and nuts like almond, walnut, and peanut should be consumed.

Other-

Should consume meals and beverages that include calcium, iron, and zinc.

4.8 LIVER DISEASE AND NUTRITION

From protein synthesis and blood clotting to cholesterol, glucose, and iron metabolism, the liver is crucial for numerous biological processes.

4.8.1 Cause of liver disease

There are numerous illnesses and conditions that can harm the liver, including alcoholism, misuse of statins, hepatitis A, B, C, D, and E, non-alcohol fatty liver disease, and iron overload. Other drugs that can harm the liver include too much acetaminophen or acetaminophen combined medications like Norco or Vicodin.

Symptoms-

- ✚ Weight loss
- ✚ Vomiting and nausea
- ✚ Weakness
- ✚ Fatigue
- ✚ Yellow discoloration of the skin

Managing your diet if you have liver illness Malnourished individuals with advanced cirrhosis. Patients with liver problems must make sure they get enough carbs, lipids, and proteins in a balanced diet. A balanced diet will lower the danger of undernutrition and avoid muscle wasting.

4.8.2 Diabetes in liver disease

- ✚ Insulin therapy
- ✚ Diabetes education without calorie restriction is necessary for management.

4.8.3 End stage liver disease of nutritional management

- ✚ To prevent needless fat restriction.
- ✚ Should continue consuming a lot of protein.
- ✚ To promote grazing often.
- ✚ To continue using a lot of energy.
- ✚ Whenever there is an illness or oedema, limit your salt consumption.
- ✚ Should think about adding branched-chain amino acids to your diet

4.8.4 Herbal remedies

- ✚ Be mindful of any potential negative effects. Some plants are hepatotoxic, thus anyone with liver illness should stay away from them.
- ✚ Hepatic encephalopathy: 40g of easily digested protein should be given, and lactulose may help people with liver illness have lower blood ammonia levels.
- ✚ It functions or aids in the removal of ammonia from the body by pulling it from the blood into the colon.
- ✚ If you have liver or hepatic cirrhosis, you shouldn't consume alcohol.
- ✚ Cirrhosis, good weight management, and a balanced diet.
- ✚ No items with additional salt, including pickles, salty biscuits, or other salty meals.
- ✚ Never recommend protein if there is an access issue. but to provide wholesome protein.

4.8.5 Acute hepatitis management

- ✚ Carbohydrate-rich diet foods that are easy to eat should be consumed, but meals that cause vomiting shouldn't be given.
- ✚ Restrictions on protein and lipids.
- ✚ Asceticism and oedema are caused by the production of liver protein albumin. liver produces hypo-albumin, which is equivalent to curdling the liver's water with 10 to 12 litres of water.
- ✚ Fluid accumulates in the tissues, often in the legs, feet, or back, causing oedema.
- ✚ Patients who develop cirrhosis and ascites should often limit their sodium intake.
- ✚ Lemon juice without salt and most fresh meals with minimal sodium content.
- ✚ Alcohol, hunger, obesity, certain beverages, and other conditions may result in fatty livers.
- ✚ It should be addressed with a well-balanced diet and the avoidance of harmful chemicals and pharmaceuticals since it is not caused by consuming fat.

4.9 ARTHRITIS AND BONE HEALTH

Arthritis is an inflammatory condition that may affect one or more joints.

Although there are approximately or more than 100 distinct forms of arthritis, there are two that are the most prevalent.

- (i) Osteoarthritis (OA) &
- (ii) Rheumatoid arthritis (RA) Arthritis is mostly common for adults

(iii) But it can also develop in children, younger, teens. But overweight men and women suffering arthritis.

Glucosamine, chondroitin, omega-3 fatty acids, and green tea are among supplements that may be used to treat joint discomfort caused by arthritis. For joint discomfort, calcium and vitamin D are crucial.

4.9.1 Bone Wellness

- ✚ The human body is supported by the bones, which also shield the heart, brain, and other vital organs from harm.
- ✚ Minerals like calcium and phosphorus, which keep bones strong and release them into the body when needed for other purposes, are also stored in bones.
- ✚ Vitamin D is necessary for bone health and is a crucial component of bones.
- ✚ Vitamin D, PTH (parathyroid hormone), serum phosphate, and Alp-Alkaline Phosphate are tested to determine bone health.

4.9.2 Calcium

Osteomalacia develops if vitamin D levels are low; if PTH levels are low, vitamin D levels are also low. Therefore, if vitamin intake is increased, consume 800 mg of vitamin D daily. Along with a balanced diet, consume daily foods that are high in vitamins, calcium, and phosphate.

CHAPTER FIVE

5.1 QUESTIONNAIRE

DAFFODIL INTERNATIONAL UNIVERSITY
Daffodil Smart City (DSC), Ashulia, DHAKA
DEPARTMENT OF NUTRITION AND FOOD ENGINEERING

Year: 2022

Date:

Case Study No:

Information about Patient

- a) Name :
- b) Address :
- c) Name of the Hospital : BIRDEM
- d) Admission Date :
- e) Reason of admission :
- f) Word No :
- g) Bed No :
- h) Health Condition :
- i) Mental status :

Anthropometric parameters

Age: years **Sex:** Male **Weight:** kg **Height:** BMI: kg/m² **IBW:** kg

Underweight Normal Overweight Obesity

Recent weight Gain: Yes No

How Much: kg

Intentional Unintentional

Nutritional Status

< 17 17-18.5 18.5 – 23 23 – 25 25.1 – 29.9 30 – 9.9 ≥ 40

Activity Level:

Very active Active Moderate worker Sedentary worker Ambulatory bed rest

Lab / Biochemical Test (Blood)	Result	Lab / Biochemical Test (Blood)	Result
Blood Glucose (F)	mmol/l	SBP	mmHg
Blood Glucose (ABF)	mmol/l	DBP	mmHg
HbA1c	%	Magnesium	mmol/l
Albumin	g/dl	Phosphate	mmol/l
Total Protein	g/dl	Calcium	mmol/l
TG	mg/dl	Potassium	mmol/l
HDL	mg/dl	Sodium	mmol/l
LDL	mg/dl	Serum Chloride	mmol/l
Total Cholesterol	mg/dl	Hb	g/dl
BUN	mg/dl	Hematocrit	%
Creatinine	mg/dl	ESR	mm
Urea	mg/dl	SGOT	IU/I
Bilirubin	mmol/dl	SGPT	U/I
STCO ₂	mmol/l	Alk.Phos.	SomU/I
Amylase	IU/I	Others	
Bicarbonate	mmol/l	Others	
Uric Acid	mg/dl	Others	

Diet Nature

Conditions That Currently Exist:

- | | |
|--|--|
| <input type="checkbox"/> Nausea | <input type="checkbox"/> Diet restriction |
| <input type="checkbox"/> Vomiting | <input type="checkbox"/> Gas formation |
| <input type="checkbox"/> Diarrhea | Taste & smell perception: <input type="checkbox"/> Yes <input type="checkbox"/> No |
| <input type="checkbox"/> Chewing difficulties | |
| <input type="checkbox"/> Swallowing difficulties | |
| <input type="checkbox"/> Constipation | |

Supplements: Yes No

If yes, Type

- Vitamins and Minerals
- Vitamins
- Minerals

Appetite:

- Excellent
- Good
- Fair
- Poor

Physical Activity:

- Regular
 Seasonal

Socioeconomic & Cultural factor:

Monthly family income : BDT /=
 Religion :
 Education :
 Occupation :
 Living status :
 Rural/Urban :

DIET PLAN (for present condition)
Nutritional status:

Estimated Energy needs: kcal	Carbohydrate: gm
Protein: gm	Fat: gm

Restrictions: Yes No

If yes,

- Calorie Fat K
 Protein Cholesterol Mg
 Free sugar Na Other

Food Exchange list

Food group	Serving	Amount gm	Kcal	Carbohydrate gm	Protein gm	Fat gm
Cereals						
Pulses						
Fish/Meat/ Egg						
Vegetables						
Milk & Milk product						
Fruits						
Oil						
Total						

Menu Planning

Meal	Food	Serving	Amount	
			Household	gm
Breakfast				
Snacks (Mid-morning)				
Lunch				
Snacks (Afternoon)				
Dinner				
Bed-time				

Advice /Recommendation for Patients

Foods to be avoided	Moderate to eat	Foods permitted
Beans, seeds, extra sugar, soft drinks, oily foods, fast-foods.	Egg, meat, oil, milk	Green vegetables, fruits, whole grain rice, flour

Other Dietary Guidelines

<ol style="list-style-type: none"> 1. Lean meat, low fat milk or skim milk has to be consumed for better health. 2. Sea fishes have contained lots of PUFA that can increase the good cholesterol in the body. So, these can be included in diet. 3. Always drink plenty of water for hydration of the body. 4. Regular eat in a recommended amount in a diet chart 5. Always do exercise or walk at least 30-45 minutes. 6. Always check-up the blood glucose level.

CHAPTER SIX

6.1 CASE STUDIES

Throughout the internship program I handled 50 patients those who have diabetes with the complications of electrolyte imbalance, CKD and stroke. So here the 6 diet charts with their history which I made for them is given below:

DAFFODIL INTERNATIONAL UNIVERSITY

Daffodil Smart City (DSC), Ashulia, DHAKA
DEPARTMENT OF NUTRITION AND FOOD ENGINEERING

Year: 2022

Date: 10.10.22

Case Study No: 01

Information about Patient

- a) Name : Ana's Miah
- b) Address :
- c) Name of the Hospital : BIRDEM
- d) Admission Date :
- e) Reason of admission : Weak, appetite
- f) Word No 123
- g) Bed No 1238
- h) Health Condition :
- i) Mental status :

Anthropometric parameters

Age: 35 years **Sex:** Male **Weight:** 65 kg **Height:** 155cm **BMI:** kg/m² **IBW:** kg

Underweight Normal Overweight Obesity

Recent weight Gain: Yes No

How Much: kg

Intentional Unintentional

Nutritional Status

< 17 17-18.5 18.5 – 23 23 – 25 25.1 – 29.9 30 – 9.9 ≥ 40

Activity Level:

Very active Active Moderate worker Sedentary worker Ambulatory bed rest

Lab / Biochemical Test (Blood)	Result		Lab / Biochemical Test (Blood)	Result	
Blood Glucose (F)	24.88	mmol/l	SBP		mmHg
Blood Glucose (ABF)	23.67	mmol/l	DBP		mmHg
HbA1c	10.29	%	Magnesium		mmol/l
Albumin	18	g/dl	Phosphate	Nil	mmol/l
Total Protein		g/dl	Calcium	8.54	mmol/l
TG	112.00	mg/dl	Potassium	5.34	mmol/l
HDL	80	mg/dl	Sodium		mmol/l
LDL	168	mg/dl	Serum Chloride		mmol/l
Total Cholesterol	168.20	mg/dl	Hb		g/dl
BUN		mg/dl	Hematocrit	28	%
Creatinine	5.08	mg/dl	ESR	53	mm
Urea		mg/dl	SGOT		IU/I
Bilirubin		mmol/dl	SGPT		U/I
STCO ₂		mmol/l	Alk.Phos.		SomU/I
Amylase		IU/I	Others		
Bicarbonate	21.00	mmol/l	Others		
Uric Acid	Nil	mg/dl	Others		

Diet Nature

Conditions That Currently Exist:

- | | |
|--|--|
| <input checked="" type="checkbox"/> Nausea | <input type="checkbox"/> Diet restriction |
| <input checked="" type="checkbox"/> Vomiting | <input checked="" type="checkbox"/> Gas formation |
| <input type="checkbox"/> Diarrhea | Taste & smell perception: <input type="checkbox"/> Yes <input type="checkbox"/> No |
| <input type="checkbox"/> Chewing difficulties | |
| <input type="checkbox"/> Swallowing difficulties | |
| <input type="checkbox"/> Constipation | |

Supplements: Yes No

If yes, Type

- Vitamins and Minerals
 Vitamins
 Minerals

Appetite:

- Excellent
 Good
 Fair

Poor

Physical Activity: Regular
 Seasonal

Socioeconomic & Cultural factor:

Monthly family income : BDT /=
 Religion : Islam
 Education : HSC
 Occupation :
 Living status :
 Rural/Urban : Urban

DIET PLAN (for present condition)

Nutritional status:

Estimated Energy needs: kcal	Carbohydrate: gm
Protein: gm	Fat: gm

Restrictions: Yes No

If yes,

Calorie Fat K
 Protein Cholesterol Mg
 Free sugar Na Other

Food Exchange list

Food group	Serving	Amount gm	Kcal	Carbohydrate gm	Protein gm	Fat gm
Cereals	9	540	765	162	18	-
Pulses	2	60	160	30	10	-
Fish/Meat/ Egg	4	120	260	8	20	8
Vegetables	10	300	400	80	20	-
Milk & Milk product	1	92.5	150	12	8	8
Fruits	2	60	80	20	2	-
Oil	3	33	300	-	-	33
Total		1205.5	2115	312	78	49

Menu Planning

Meals	Foods	Serving Size	Amount
			Household
Breakfast	Whole grain ruti	2	1 small
	Egg	2	1 medium
	Vegetable	4	100gm
Snacks (Mid-morning)	Milk(skim)	1	1 glass
	Biscuits	2	3pcs
	Fruits(Apple/Banana)	1	100gm
Lunch	Rice	2	½ cup cooked
	Fish/chicken	1	1 piece ,1 leg/breast
	Mixed vegetables	3	100gm
	Pulse	2	1 cup
Snacks (Afternoon)	Puffed rice	1	1 cup
	Fruits (sour) - Orange	1	100gm
Dinner	Rice/Ruti	1	½ cup cooked/ 1 small
	Fish	1	1 piece
	Mixed vegetables	3	100gm
	Pulse	2	1 cup
Bed-time	Bread (sugar free)	1	1 slice
	Total Cooking Oil	3	1/2 Cup

Advice /Recommendation for Patients

Foods to be avoided	Moderate to eat	Foods permitted
Beans, seeds, extra sugar, soft drinks, oily foods, fast-foods.	Egg, meat, oil, milk	Green vegetables, fruits, whole grain rice, flour

Other Dietary Guidelines

<ol style="list-style-type: none"> 7. Lean meat, low fat milk or skim milk has to be consumed for better health. 8. Sea fishes have contained lots of PUFA that can increase the good cholesterol in the body. So, these can be included in diet. 9. Always drink plenty of water for hydration of the body. 10. Regular eat in a recommended amount in a diet chart 11. Always do exercise or walk at least 30-45 minutes. 12. Always check-up the blood glucose level.
--

DAFFODIL INTERNATIONAL UNIVERSITY

Daffodil Smart City (DSC), Ashulia, DHAKA
DEPARTMENT OF NUTRITION AND FOOD ENGINEERING

Year: 2022

Date: 10.10.22

Case Study No: 02

Information about Patient

- a) Name : Md Shahjahan Mina
- b) Address :
- c) Name of the Hospital : BIRDEM
- d) Admission Date :
- e) Reason of admission : loose motion 2 days, vomiting 2 days
- f) Word No : W
- g) Bed No : 1157
- h) Health Condition :
- i) Mental status :

Anthropometric parameters

Age: 54 years **Sex:** Male **Weight:** 77 kg **Height:** 5'7'' **BMI:** 26.6 kg/m² **IBW:** kg

Underweight Normal Overweight Obesity

Recent weight Gain: Yes No

How Much: kg

Intentional Unintentional

Nutritional Status

< 17 17-18.5 18.5 – 23 23 – 25 25.1 – 29.9 30 – 9.9 ≥ 40

Activity Level:

Very active Active Moderate worker Sedentary worker Ambulatory bed rest

Lab / Biochemical Test (Blood)	Result	Lab / Biochemical Test (Blood)	Result
Blood Glucose (F)	mmol/l	SBP	mmHg
Blood Glucose (ABF)	mmol/l	DBP	mmHg
HbA1c	%	Magnesium	mmol/l
Albumin	g/dl	Phosphate	mmol/l
Total Protein	g/dl	Calcium	mmol/l
TG	mg/dl	Potassium	4.4 mmol/l

HDL		mg/dl	Sodium		mmol/l
LDL		mg/dl	Serum Chloride	105	mmol/l
Total Cholesterol		mg/dl	Hb		g/dl
BUN		mg/dl	Hematocrit		%
Creatinine		mg/dl	ESR		mm
Urea		mg/dl	SGOT		IU/I
Bilirubin		mmol/dl	SGPT		U/I
STCO2	22.0	mmol/l	Alk.Phos.		SomU/I
Amylase		IU/I	Others		
Bicarbonate		mmol/l	Others		
Uric Acid		mg/dl	Others		

Diet Nature

Conditions That Currently Exist:

- | | |
|--|---|
| <input type="checkbox"/> Nausea | <input type="checkbox"/> Diet restriction |
| <input checked="" type="checkbox"/> Vomiting | <input checked="" type="checkbox"/> Gas formation |
| <input type="checkbox"/> Diarrhea | Taste & smell perception: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No |
| <input type="checkbox"/> Chewing difficulties | |
| <input type="checkbox"/> Swallowing difficulties | |
| <input type="checkbox"/> Constipation | |

Supplements: Yes No

If yes, Type

- Vitamins and Minerals
- Vitamins
- Minerals

Appetite:

- Excellent
- Good
- Fair
- Poor

Physical Activity: Regular
 Seasonal

Socioeconomic & Cultural factor:

Monthly family income : BDT15000 /=
 Religion : Islam
 Education : SSC
 Occupation :
 Living status :
 Rural/Urban : Urban

DIET PLAN (for present condition)
Nutritional status:

Estimated Energy needs: 2490 kcal	Carbohydrate: 3544gm
Protein: 88gm	Fat: 68gm

Restrictions: Yes No

If yes,

- | | | |
|-------------------------------------|--------------------------------------|--------------------------------|
| <input type="checkbox"/> Calorie | <input type="checkbox"/> Fat | <input type="checkbox"/> K |
| <input type="checkbox"/> Protein | <input type="checkbox"/> Cholesterol | <input type="checkbox"/> Mg |
| <input type="checkbox"/> Free sugar | <input type="checkbox"/> Na | <input type="checkbox"/> Other |

Food Exchange list

Food group	Serving	Amount gm	Kcal	Carbohydrate gm	Protein gm	Fat gm
Cereals	10	600	850	180	20	-
Pulses	2	60	160	30	10	-
Fish/Meat/ Egg	4	120	260	8	20	8
Vegetables	9	270	360	72	18	-
Milk & Milk product	2	185	300	24	16	16
Fruits	4	120	160	40	4	-
Oil	4	44	400	-	-	44
Total		1399	2490	354	88	68

Menu Planning

Meals	Foods	Serving Size	Amount
			Household
Breakfast	Whole grain ruti	2	1 small
	Egg	2	1 medium
	Vegetable	3	100gm
Snacks (Mid-morning)	Milk(skim)	1	1 glass
	Biscuits	2	3pcs
	Fruits(Apple/Banana)	2	100gm
Lunch	Rice	2	½ cup cooked
	Fish/chicken	1	1 piece ,1 leg/breast
	Mixed vegetables	3	100gm
	Pulse	2	1 cup
Snacks (Afternoon)	Milk(skim)	1	1 glass
	Puffed rice	1	1 cup
	Fruits (sour) – Orange	2	100gm
Dinner	Rice/Ruti	2	½ cup cooked/ 1 small
	Fish	1	1 piece
	Mixed vegetables	3	100gm
	Pulse	2	1 cup
Bed-time	Bread (sugar free)	1	1 slice
	Total Cooking Oil	4	½ Cup

Advice /Recommendation for Patients

Foods to be avoided	Moderate to eat	Foods permitted
Beans, seeds, extra sugar, soft drinks, oily foods, fast-foods.	Egg, meat, oil, milk	Green vegetables, fruits, whole grain rice, flour

Other Dietary Guidelines

<ol style="list-style-type: none"> 1. Lean meat, low fat milk or skim milk has to be consumed for better health. 2. Sea fishes have contained lots of PUFA that can increase the good cholesterol in the body. So, these can be included in diet. 3. Always drink plenty of water for hydration of the body. 4. Regular eat in a recommended amount in a diet chart 5. Always do exercise or walk at least 30-45 minutes. 6. Always check-up the blood glucose level.

DAFFODIL INTERNATIONAL UNIVERSITY

Daffodil Smart City (DSC), Ashulia, DHAKA
DEPARTMENT OF NUTRITION AND FOOD ENGINEERING

Year: 2022

Date: 10.10.22

Case Study No: 03

Information about Patient

- a) Name : Jamal Hossain
 b) Address :
 c) Name of the Hospital : BIRDEM
 d) Admission Date :
 e) Reason of admission : vomiting for 1-day, uncontrolled blood sugar 1 months
 f) Word No : W
 g) Bed No : 1145
 h) Health Condition :
 i) Mental status :

Anthropometric parameters

Age: 47years **Sex:** Male **Weight:** 83 kg **Height:** 5'10' **BMI:** 26.3 kg/m² **IBW:** kg

Underweight Normal Overweight Obesity

Recent weight Gain: Yes No

How Much: kg

Intentional Unintentional

Nutritional Status

< 17 17-18.5 18.5 – 23 23 – 25 25.1 – 29.9 30 – 9.9 ≥ 40

Activity Level:

Very active Active Moderate worker Sedentary worker Ambulatory bed rest

Lab / Biochemical Test (Blood)	Result	Lab / Biochemical Test (Blood)	Result
Blood Glucose (F)	mmol/l	SBP	mmHg
Blood Glucose (ABF)	mmol/l	DBP	mmHg
HbA1c	%	Magnesium	mmol/l
Albumin	g/dl	Phosphate	4.8 mmol/l
Total Protein	g/dl	Calcium	8.9 mmol/l
TG	mg/dl	Potassium	mmol/l

HDL		mg/dl	Sodium		mmol/l
LDL		mg/dl	Serum Chloride		mmol/l
Total Cholesterol		mg/dl	Hb		g/dl
BUN		mg/dl	Hematocrit		%
Creatinine		mg/dl	ESR		mm
Urea		mg/dl	SGOT		IU/I
Bilirubin		mmol/dl	SGPT		U/I
STCO2		mmol/l	Alk.Phos.		SomU/I
Amylase		IU/I	Others		
Bicarbonate		mmol/l	Others		
Uric Acid		mg/dl	Others		

Diet Nature

Conditions That Currently Exist:

- | | |
|--|---|
| <input type="checkbox"/> Nausea | <input type="checkbox"/> Diet restriction |
| <input checked="" type="checkbox"/> Vomiting | <input checked="" type="checkbox"/> Gas formation |
| <input type="checkbox"/> Diarrhea | Taste & smell perception: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No |
| <input type="checkbox"/> Chewing difficulties | |
| <input type="checkbox"/> Swallowing difficulties | |
| <input type="checkbox"/> Constipation | |

Supplements: Yes No

If yes, Type

- Vitamins and Minerals
- Vitamins
- Minerals

Appetite:

- Excellent
- Good
- Fair
- Poor

Physical Activity: Regular
 Seasonal

Socioeconomic & Cultural factor:

Monthly family income : BDT 35000/=
 Religion : Islam
 Education : HSC
 Occupation :
 Living status :
 Rural/Urban : Urban

DIET PLAN (for present condition)

Nutritional status:

Estimated Energy needs: 2575 kcal	Carbohydrate: 372gm
Protein:90 gm	Fat: 68gm

Restrictions: Yes No

If yes,

- | | | |
|-------------------------------------|--------------------------------------|--------------------------------|
| <input type="checkbox"/> Calorie | <input type="checkbox"/> Fat | <input type="checkbox"/> K |
| <input type="checkbox"/> Protein | <input type="checkbox"/> Cholesterol | <input type="checkbox"/> Mg |
| <input type="checkbox"/> Free sugar | <input type="checkbox"/> Na | <input type="checkbox"/> Other |

Food Exchange list

Food group	Serving	Amount gm	Kcal	Carbohydrate gm	Protein gm	Fat gm
Cereals	11	660	935	198	22	-
Pulses	2	60	160	30	10	-
Fish/Meat/ Egg	4	120	260	8	20	8
Vegetables	9	270	360	72	18	-
Milk & Milk product	2	185	300	24	16	16
Fruits	4	120	160	40	4	-
Oil	4	44	400	-	-	44
Total		1459	2575	372	90	68

Menu Planning

Meals	Foods	Serving Size	Amount
			Household
Breakfast	Whole grain ruti	3	1 small
	Egg	2	1 medium
	Vegetable	3	100gm
Snacks (Mid-morning)	Milk(skim)	1	1 glass
	Biscuits	2	3pcs
	Fruits(Apple/Banana)	2	100gm
Lunch	Rice	2	½ cup cooked
	Fish/chicken	1	1 piece ,1 leg/breast
	Mixed vegetables	3	100gm
	Pulse	2	1 cup
Snacks (Afternoon)	Milk(skim)	1	1 glass
	Puffed rice	1	1 cup
	Fruits (sour) - Orange	2	100gm
Dinner	Rice/Ruti	2	½ cup cooked/ 1 small
	Fish	1	1 piece
	Mixed vegetables	3	100gm
	Pulse	2	1 cup
Bed-time	Bread (sugar free)	1	1 slice
	Total Cooking Oil	4	1/2 Cup

Advice /Recommendation for Patients

Foods to be avoided	Moderate to eat	Foods permitted
Beans, seeds, extra sugar, soft drinks, oily foods, fast-foods.	Egg, meat, oil, milk	Green vegetables, fruits, whole grain rice, flour

Other Dietary Guidelines

<ol style="list-style-type: none"> 1. Lean meat, low fat milk or skim milk has to be consumed for better health. 2. Sea fishes have contained lots of PUFA that can increase the good cholesterol in the body. So, these can be included in diet. 3. Always drink plenty of water for hydration of the body. 4. Regular eat in a recommended amount in a diet chart 5. Always do exercise or walk at least 30-45 minutes. 6. Always check-up the blood glucose level.

DAFFODIL INTERNATIONAL UNIVERSITY

Daffodil Smart City (DSC), Ashulia, DHAKA

DEPARTMENT OF NUTRITION AND FOOD ENGINEERING

Year: 2022

Date: 10.10.22

Case Study No: 04

Information about Patient

- a) Name : Anisur Rahman
b) Address :
c) Name of the Hospital : BIRDEM
d) Admission Date :
e) Reason of admission : insomnia for 15 days
f) Word No : W
g) Bed No : 622
h) Health Condition :
i) Mental status :

Anthropometric parameters

Age: 55 years **Sex:** Male **Weight:** 68 kg **Height:** 5'3" **BMI:** 26.6 kg/m² **IBW:** kg

Underweight Normal Overweight Obesity

Recent weight Gain: Yes No

How Much: 4 kg

Intentional Unintentional

Nutritional Status

< 17 17-18.5 18.5 – 23 23 – 25 25.1 – 29.9 30 – 39.9 ≥ 40

Activity Level:

Very active Active Moderate worker Sedentary worker Ambulatory bed rest

Lab / Biochemical Test (Blood)	Result	Lab / Biochemical Test (Blood)	Result
Blood Glucose (F)	mmol/l	SBP	mmHg
Blood Glucose (ABF)	mmol/l	DBP	mmHg
HbA1c	%	Magnesium	mmol/l
Albumin	32.4 g/dl	Phosphate	mmol/l
Total Protein	g/dl	Calcium	mmol/l
TG	mg/dl	Potassium	3.9 mmol/l
HDL	mg/dl	Sodium	mmol/l

LDL		mg/dl	Serum Chloride	105	mmol/l
Total Cholesterol		mg/dl	Hb		g/dl
BUN		mg/dl	Hematocrit		%
Creatinine	1.4	mg/dl	ESR		mm
Urea		mg/dl	SGOT		IU/I
Bilirubin		mmol/dl	SGPT		U/I
STCO2	19	mmol/l	Alk.Phos.		SomU/I
Amylase		IU/I	Others		
Bicarbonate		mmol/l	Others		
Uric Acid		mg/dl	Others		

Diet Nature

Conditions That Currently Exist:

- | | |
|--|---|
| <input type="checkbox"/> Nausea | <input type="checkbox"/> Diet restriction |
| <input type="checkbox"/> Vomiting | <input checked="" type="checkbox"/> Gas formation |
| <input type="checkbox"/> Diarrhea | Taste & smell perception: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No |
| <input type="checkbox"/> Chewing difficulties | |
| <input type="checkbox"/> Swallowing difficulties | |
| <input type="checkbox"/> Constipation | |

Supplements: Yes No

If yes, Type

- Vitamins and Minerals
- Vitamins
- Minerals

Appetite:

- Excellent
- Good
- Fair
- Poor

Physical Activity: Regular
 Seasonal

Socioeconomic & Cultural factor:

Monthly family income : BDT 25000/=
 Religion : Islam
 Education : SSC
 Occupation :
 Living status :
 Rural/Urban : Urban

DIET PLAN (for present condition)

Nutritional status:

Estimated Energy needs: 2200 kcal	Carbohydrate: 294gm
Protein: 78gm	Fat: 68gm

Restrictions: Yes No

If yes,

- | | | |
|-------------------------------------|--------------------------------------|--------------------------------|
| <input type="checkbox"/> Calorie | <input type="checkbox"/> Fat | <input type="checkbox"/> K |
| <input type="checkbox"/> Protein | <input type="checkbox"/> Cholesterol | <input type="checkbox"/> Mg |
| <input type="checkbox"/> Free sugar | <input type="checkbox"/> Na | <input type="checkbox"/> Other |

Food Exchange list

Food group	Serving	Amount gm	Kcal	Carbohydrate gm	Protein gm	Fat gm
Cereals	8	480	680	144	16	-
Pulses	2	60	160	30	10	-
Fish/Meat/ Egg	4	120	260	8	20	8
Vegetables	6	180	240	48	12	-
Milk & Milk product	2	185	300	24	16	16
Fruits	4	120	160	40	4	-
Oil	4	44	400	-	-	44
Total		1189	2200	294	78	68

Menu Planning

Meals	Foods	Serving Size	Amount
			Household
Breakfast	Whole grain ruti	2	1 small
	Egg	2	1 medium
	Vegetable	2	100gm
Snacks (Mid-morning)	Milk(skim)	1	1 glass
	Biscuits	1	3pcs
	Fruits (Apple/Banana)	2	100gm
Lunch	Rice	2	½ cup cooked
	Fish/chicken	1	1 piece ,1 leg/breast
	Mixed vegetables	2	100gm
	Pulse	2	1 cup
Snacks (Afternoon)	Milk(skim)	1	1 glass
	Puffed rice	1	1 cup
	Fruits (sour) - Orange	2	100gm
Dinner	Rice/Ruti	1	½ cup cooked/ 1 small
	Fish	1	1 piece
	Mixed vegetables	2	100gm
	Pulse	2	1 cup
Bed-time	Bread (sugar free)	1	1 slice
	Total Cooking Oil	4	1/2 Cup

Advice /Recommendation for Patients

Foods to be avoided	Moderate to eat	Foods permitted
Beans, seeds, extra sugar, soft drinks, oily foods, fast-foods.	Egg, meat, oil, milk	Green vegetables, fruits, whole grain rice, flour

Other Dietary Guidelines

<ol style="list-style-type: none"> 1. Lean meat, low fat milk or skim milk has to be consumed for better health. 2. Sea fishes have contained lots of PUFA that can increase the good cholesterol in the body. So, these can be included in diet. 3. Always drink plenty of water for hydration of the body. 4. Regular eat in a recommended amount in a diet chart 5. Always do exercise or walk at least 30-45 minutes. 6. Always check-up the blood glucose level.

DAFFODIL INTERNATIONAL UNIVERSITY
 Daffodil Smart City (DSC), Ashulia, DHAKA
 DEPARTMENT OF NUTRITION AND FOOD ENGINEERING

Year: 2022

Date: 10.10.22

Case Study No: 05

Information about Patient

- a) Name : Tofazzal Hossain
- b) Address :
- c) Name of the Hospital : BIRDEM
- d) Admission Date :
- e) Reason of admission : sculling of right wrist joint and over scalp for 2 months
- f) Word No : W
- g) Bed No : 623
- h) Health Condition :
- i) Mental status :

Anthropometric parameters

Age: 35 years **Sex:** Male **Weight:** 76 kg **Height:** 5'8'' **BMI:** 25.5 kg/m² **IBW:** kg

Underweight Normal Overweight Obesity

Recent weight Gain: Yes No

How Much: 6kg

Intentional Unintentional

Nutritional Status

< 17 17-18.5 18.5 – 23 23 – 25 25.1 – 29.9 30 – 9.9 ≥ 40

Activity Level:

Very active Active Moderate worker Sedentary worker Ambulatory bed rest

Lab / Biochemical Test (Blood)	Result	Lab / Biochemical Test (Blood)	Result
Blood Glucose (F)	mmol/l	SBP	mmHg
Blood Glucose (ABF)	mmol/l	DBP	mmHg
HbA1c	10.0 %	Magnesium	mmol/l
Albumin	g/dl	Phosphate	mmol/l
Total Protein	g/dl	Calcium	mmol/l
TG	mg/dl	Potassium	mmol/l

HDL		mg/dl	Sodium		mmol/l
LDL		mg/dl	Serum Chloride		mmol/l
Total Cholesterol		mg/dl	Hb		g/dl
BUN		mg/dl	Hematocrit		%
Creatinine		mg/dl	ESR		mm
Urea		mg/dl	SGOT		IU/I
Bilirubin		mmol/dl	SGPT		U/I
STCO2		mmol/l	Alk.Phos.		SomU/I
Amylase		IU/I	Others		
Bicarbonate		mmol/l	Others		
Uric Acid		mg/dl	Others		

Diet Nature

Conditions That Currently Exist:

- | | |
|--|--|
| <input type="checkbox"/> Nausea | <input type="checkbox"/> Diet restriction |
| <input type="checkbox"/> Vomiting | <input type="checkbox"/> Gas formation |
| <input type="checkbox"/> Diarrhea | Taste & smell perception: <input type="checkbox"/> Yes <input type="checkbox"/> No |
| <input type="checkbox"/> Chewing difficulties | |
| <input type="checkbox"/> Swallowing difficulties | |
| <input type="checkbox"/> Constipation | |

Supplements: Yes No

If yes, Type

- Vitamins and Minerals
- Vitamins
- Minerals

Appetite:

- Excellent
- Good
- Fair
- Poor

Physical Activity: Regular
 Seasonal

Socioeconomic & Cultural factor:

Monthly family income : BDT 50000/=
 Religion : Islam
 Education : BSc in Textile
 Occupation :
 Living status :
 Rural/Urban : Urban

DIET PLAN (for present condition)

Nutritional status:

Estimated Energy needs: 2385kcal	Carbohydrate: 312gm
Protein: 80gm	Fat: 79gm

Restrictions: Yes No

If yes,

- | | | |
|-------------------------------------|--------------------------------------|--------------------------------|
| <input type="checkbox"/> Calorie | <input type="checkbox"/> Fat | <input type="checkbox"/> K |
| <input type="checkbox"/> Protein | <input type="checkbox"/> Cholesterol | <input type="checkbox"/> Mg |
| <input type="checkbox"/> Free sugar | <input type="checkbox"/> Na | <input type="checkbox"/> Other |

Food Exchange list

Food group	Serving	Amount gm	Kcal	Carbohydrate gm	Protein gm	Fat gm
Cereals	9	540	765	162	18	-
Pulses	2	60	160	30	10	-
Fish/Meat/ Egg	4	120	260	8	20	8
Vegetables	6	180	240	48	12	-
Milk & Milk product	2	185	300	24	16	16
Fruits	4	120	160	40	4	-
Oil	5	55	500	-	-	55
Total		1260	2385	312	80	79

Menu Planning

Meals	Foods	Serving Size	Amount
			Household
Breakfast	Whole grain Ruti	2	1 small
	Egg	2	1 medium
	Vegetable	2	100gm
Snacks (Mid-morning)	Milk(skim)	1	1 glass
	Biscuits	1	3pcs
	Fruits (Apple/Banana)	2	100gm
Lunch	Rice	2	1/2 cup cooked
	Fish/chicken	1	1 piece ,1 leg/breast
	Mixed vegetables	2	100gm
	Pulse	2	1 cup
Snacks (Afternoon)	Milk(skim)	1	1 glass
	Puffed rice	1	1 cup
	Fruits (sour) - Orange	2	100gm
Dinner	Rice/Ruti	2	1/2 cup cooked/ 1 small
	Fish	1	1 piece
	Mixed vegetables	2	100gm
	Pulse	2	1 cup
Bed-time	Bread (sugar free)	1	1 slice
	Total Cooking Oil	5	1/2 Cup

Advice /Recommendation for Patients

Foods to be avoided	Moderate to eat	Foods permitted
Beans, seeds, extra sugar, soft drinks, oily foods, fast-foods.	Egg, meat, oil, milk	Green vegetables, fruits, whole grain rice, flour

Other Dietary Guidelines

<ol style="list-style-type: none"> 1. Lean meat, low fat milk or skim milk has to be consumed for better health. 2. Sea fishes have contained lots of PUFA that can increase the good cholesterol in the body. So, these can be included in diet. 3. Always drink plenty of water for hydration of the body. 4. Regular eat in a recommended amount in a diet chart 5. Always do exercise or walk at least 30-45 minutes. 6. Always check-up the blood glucose level.

DAFFODIL INTERNATIONAL UNIVERSITY
 Daffodil Smart City (DSC), Ashulia, DHAKA
 DEPARTMENT OF NUTRITION AND FOOD ENGINEERING

Year: 2022

Date: 10.10.22

Case Study No: 06

Information about Patient

- a) Name : Abdul khalek
- b) Address :
- c) Name of the Hospital : BIRDEM
- d) Admission Date :
- e) Reason of admission : dimness of vision for 2 month
- f) Word No : W
- g) Bed No : 627
- h) Health Condition :
- i) Mental status :

Anthropometric parameters

Age: 53 years **Sex:** Male **Weight:** 64 kg **Height:** 5'6'' **BMI:** 22.8 kg/m² **IBW:** kg

Underweight Normal Overweight Obesity

Recent weight Gain: Yes No

How Much: kg

Intentional Unintentional

Nutritional Status

< 17 17-18.5 18.5 – 23 23 – 25 25.1 – 29.9 30 – 39.9 ≥ 40

Activity Level:

Very active Active Moderate worker Sedentary worker Ambulatory bed rest

Lab / Biochemical Test (Blood)	Result	Lab / Biochemical Test (Blood)	Result
Blood Glucose (F)	mmol/l	SBP	mmHg
Blood Glucose (ABF)	mmol/l	DBP	mmHg
HbA1c	%	Magnesium	mmol/l
Albumin	g/dl	Phosphate	mmol/l
Total Protein	g/dl	Calcium	mmol/l
TG	mg/dl	Potassium	5.1 mmol/l
HDL	mg/dl	Sodium	mmol/l

LDL		mg/dl	Serum Chloride	100	mmol/l
Total Cholesterol		mg/dl	Hb		g/dl
BUN		mg/dl	Hematocrit		%
Creatinine	4.1	mg/dl	ESR		mm
Urea		mg/dl	SGOT		IU/I
Bilirubin		mmol/dl	SGPT		U/I
STCO2	26.0	mmol/l	Alk.Phos.		SomU/I
Amylase		IU/I	Others		
Bicarbonate		mmol/l	Others		
Uric Acid		mg/dl	Others		

Diet Nature

Conditions That Currently Exist:

- | | |
|--|--|
| <input type="checkbox"/> Nausea | <input type="checkbox"/> Diet restriction |
| <input type="checkbox"/> Vomiting | <input type="checkbox"/> Gas formation |
| <input type="checkbox"/> Diarrhea | Taste & smell perception: <input type="checkbox"/> Yes <input type="checkbox"/> No |
| <input type="checkbox"/> Chewing difficulties | |
| <input type="checkbox"/> Swallowing difficulties | |
| <input type="checkbox"/> Constipation | |

Supplements: Yes No

If yes, Type

- Vitamins and Minerals
- Vitamins
- Minerals

Appetite:

- Excellent
- Good
- Fair
- Poor

Physical Activity: Regular
 Seasonal

Socioeconomic & Cultural factor:

Monthly family income : BDT /=
 Religion : Islam
 Education : MSc
 Occupation :
 Living status :
 Rural/Urban : Urban

DIET PLAN (for present condition)

Nutritional status:

Estimated Energy needs: kcal	Carbohydrate: gm
Protein: gm	Fat: gm

Restrictions: Yes No

If yes,

- | | | |
|-------------------------------------|--------------------------------------|--------------------------------|
| <input type="checkbox"/> Calorie | <input type="checkbox"/> Fat | <input type="checkbox"/> K |
| <input type="checkbox"/> Protein | <input type="checkbox"/> Cholesterol | <input type="checkbox"/> Mg |
| <input type="checkbox"/> Free sugar | <input type="checkbox"/> Na | <input type="checkbox"/> Other |

Food Exchange list

Food group	Serving	Amount gm	Kcal	Carbohydrate gm	Protein gm	Fat gm
Cereals	8	480	680	144	16	-
Pulses	2	60	160	30	10	-
Fish/Meat/ Egg	4	120	260	8	20	8
Vegetables	6	180	240	48	12	-
Milk & Milk product	2	185	300	24	16	16
Fruits	4	120	160	40	4	-
Oil	4	44	400	-	-	44
Total		1189	2200	294	78	68

Menu Planning

Meals	Foods	Serving Size	Amount
			Household
Breakfast	Whole grain Ruti	2	1 small
	Egg	2	1 medium
	Vegetable	2	100gm
Snacks (Mid-morning)	Milk(skim)	1	1 glass
	Biscuits	1	3pcs
	Fruits(Apple/Banana)	2	100gm
Lunch	Rice	2	1/2 cup cooked
	Fish/chicken	1	1 pieces ,1 leg/breast
	Mixed vegetables	2	100gm
	Pulse	2	1 cup
Snacks (Afternoon)	Milk(skim)	1	1 glass
	Puffed rice	1	1 cup
	Fruits (sour) - Orange	2	100gm
Dinner	Rice/Ruti	1	1/2 cup cooked/ 1 small
	Fish	1	1 piece
	Mixed vegetables	2	100gm
	Pulse	2	1 cup
Bed-time	Bread (sugar free)	1	1 slice
	Total Cooking Oil	4	1/2 Cup

Advice /Recommendation for Patients

Foods to be avoided	Moderate to eat	Foods permitted
Beans, seeds, extra sugar, soft drinks, oily foods, fast-foods.	Egg, meat, oil, milk	Green vegetables, fruits, whole grain rice, flour

Other Dietary Guidelines

<ol style="list-style-type: none"> 1. Lean meat, low fat milk or skim milk has to be consumed for better health. 2. Sea fishes have contained lots of PUFA that can increase the good cholesterol in the body. So, these can be included in diet. 3. Always drink plenty of water for hydration of the body. 4. Regular eat in a recommended amount in a diet chart 5. Always do exercise or walk at least 30-45 minutes. 6. Always check-up the blood glucose level.

CHAPTER SEVEN

7.1 CONCLUSION

This internship program at BIRDEM General Hospital was wonderful throughout and highly helpful for my future career. For me, this internship program was filled with difficulties. I gained knowledge of how to manage indoor patients, their dietary requirements in accordance with their difficulties from electrolyte imbalance, CKD, and stroke, as well as their nutritional diet chart, thanks to this internship. I may increase my knowledge and learn how to observe indoor patients via the aid of this training. I had a great time during my internship, and I can say with certainty that I now have a much better grasp of this field.

I have learnt about many diseases and how to treat them during my internship with BIRDEM. Diabetes is one of the disorders. CKD, infant feeding and breastfeeding, pregnancy, obesity, liver illness, enteral and parenteral nutrition, arthritics, and bone health. Food choices are crucial to the treatment of many disorders and their prevention. To avoid and manage these disorders, patients must maintain some dietary and lifestyle guidelines in addition to their medication. And this does not imply that individuals must consume monotonous meal on a daily basis. By selecting a different food item from their regular healthy food options, people can change their eating habits.