



# **“Dietary Management of Diabetic Patient at BIRDEM General Hospital”**

An Internship Report by  
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Submitted to the department of Nutrition and Food Engineering in partial fulfilment of  
B. Sc.in Nutrition and Food Engineering

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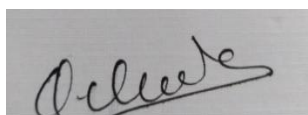
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May 2023

## **APPROVAL**

This project titled “Dietary management of diabetic patient at BIRDEM General Hospital” submitted by Sunom Saha to the Department of Nutrition and Food Engineering, Daffodil International University, has been accepted as satisfactory for the partial fulfillment of the requirements for the degree of B. Sc. in Nutrition and Food Engineering and approved as to its style and contents. I am pleased that to state that she was very professional and worked hard to preparing this report and she has been able create a good reputation. The information presented in the report seem to be true.

I wish her all prosperity in life.



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Quamrun Nahar, PhD  
Senior Research Officer, BIRDEM

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Dr. Nizam Uddin  
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## **DECLARATION**

We hereby declare that, this internship report on “Dietary Management of Diabetic Patient at BIRDEM General Hospital” is being submitted to the Department of Nutrition and Food Engineering, Faculty of Allied Health Science, Daffodil International University.

I Sunom Saha hereby declare that, this internship report that I have written is entirely original and not based on any other reports. Only what I saw and learned from my experiences is described here.

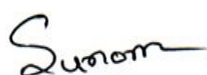
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## **ACKNOWLEDGMENT**

First, we express our heartiest thanks and gratefulness to almighty God for his divine blessing makes us possible to complete the final year internship successfully.

I would like to give our heartfelt gratitude, sincere appreciation profound regards to our respectable supervisor Mr. Nawal Sarwer, Lecture, Department of Nutrition and Food Engineering, Daffodil International University, and my grateful gratitude goes to director of BIRDEM General Hospital for approving my internship application. I also want to express my gratitude to Mrs. Quamrun Nahar, PhD Senior Research Officer, BIRDEM General Hospital.

I feel pleasure to extent heartiest respect and gratitude to Dr. Nizam Uddin, Associate professor & Head In-Charge, Department of Nutrition and Food Engineering, Daffodil International University.

I would like to thank our entire course mate in Daffodil International University, Our entire course mate in Daffodil International University, their help and inspiration during the study.

Finally, I must acknowledge with due respect the constant support and patients of my parents.

## **EXECUTIVE SUMMARY**

Having an internship opportunity at BIRDEM General Hospital is a great experience. Getting closer of experts and patients is another great lesson. Acquisition of further knowledge on diabetic and its management increases the confidence. Most of patients admitted into hospital are suffering from diabetic for a long period of time. After analysing their disease history, it is concluded that they were not following a good life style as well as not aware about their diet. In the treatment procedure diet is playing a vital role beside the other medication. Some patient is in critical condition and some are not being able to control their diabetic level.

According to medical perspective the normal blood glucose level is 6-8 mmol/L. Many other difficulties are directly and indirectly related with diabetic. Most common are diabetic nephropathy, diabetic neuropathy, diabetic gastropathy, diabetic foot etc. For diabetic nephropathy some common test is advised by doctors. S. creatinine, S. potassium, S. sodium and S. chloride are important and the normal range are (0.67-1.3) mg/dl, (3.5-5.2) mmol/L (136-148) mmol/L and (98-108) mmol/L respectively. Five patients among selected ten patients are found out of normal range for S. creatinine and six patients are found out of range for S. sodium. Three different kilocalories (1200, 1400 and 1600 kilocalorie) diet chart are suggested for the patients. Most of patient are found more than 40 years old.

Test report analysis, direct conversation with patients, diabetic treatment process, applicable diet chart for diabetic patients etc, are the learning of the study. For being a professional nutritionist, this experience will contribute a lot.

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# CHAPTER-1

## 1. Introduction

Eating the healthiest foods in moderation and following a regular meal plan, which prioritizes eating foods that are naturally high in nutrients and low in fat and calories, are the cornerstones of a diabetic diet. The most common and best foods for diabetes are usually fruits, vegetables, and healthy grains. A diabetic diet is the best eating plan for most people.

The illness known as diabetes mellitus impairs the body's capacity to produce or use insulin. The pancreas secretes the hormone insulin, which aids in the movement of blood sugar, or glucose, from the circulation into the cells where it may be broken down and utilized as fuel. Without insulin, people cannot survive [1]. It increases the risk of several major, potentially fatal micro- and macrovascular problems, which raises the expense of medical care, lowers quality of life, and increases mortality [2]. Diabetes affects at least 2.8% of people globally, according to the WHO. It is anticipated that the prevalence of the disease would double by 2030 due to the rising rate of developing type 2 diabetes [3]. Bangladesh spent US\$2.3 billion (US\$16.20 per person annually) on health care in 2010, according to the country's National Health Accounts, with 64% of the amount coming from out-of-pocket expenditures [4]. Forecasts indicate that within the following 20 years, the number of diabetes cases in Southeast Asian nations will increase by 74%, from 88 million in 2019 to 153 million by 2045 [5].

### 1.1 Objectives of Intern Study

Having an internship opportunity in BIRDEM General Hospital was a blessing for us as well as an acquisition of a great experience. The close contact with patient, direct conversation with patient, patient lab report analysis, patient diet chart observation, patient difficulties listening etc. all were a vital source of learning. The basic objectives of the study are as below.

- To expedite self-knowledge on diabetic.
- To develop an effective diet for diabetic patient.
- To gather experience from close contact of patient.
- To know the existing management system of diabetic patient used in hospital.

### 1.2 Diabetic status in Bangladesh

Significant risk factors for type-2 diabetes include being older, having more education, living in wealthy society, eating a diet heavy in carbohydrates, being sedentary, being obese, smoking, having high blood pressure, having dyslipidaemia, being older while pregnant, and having depression [6]. There are several factors that might contribute to Bangladesh's potential rise in the incidence of diabetes. According to a comprehensive analysis of research published between 1994 and 2013, Bangladesh has a prevalence of diabetes ranging from 4.5% to 35.0% [7]. Moreover, it is projected that 13.7 million Bangladeshis would have diabetes by 2045 [8].

The cost of treating complications from diabetes increases the condition's financial burden. It is estimated that the global health expenditure on diabetes would be USD 760 billion in 2019 and USD 845 billion in 2045. These expenses are thought to cost Bangladesh US\$1.5 billion a year. The overall expenses might be far greater if one accounts for both the costs of therapy and the loss of economic output. Even though LMICs have a significant and increasing diabetes burden, only 35% of worldwide health spending on the illness is attributed to these areas. If suitable preventative measures are not put in place, the expense of diabetes-related healthcare will increase in the twenty-first century.

### **1.3 Importance of healthy diet**

When a diabetic patient sees a doctor for the purpose of improving their health, the doctor will usually suggest a dietician to create a healthy eating plan for them. This is the first step in managing weight, controlling blood pressure and cholesterol, and controlling heart disease risk factors. Blood sugar is also known as glucose.

When someone consumes excess fat and calories without burning them off through exercise, their body produces an unfavourable increase in blood sugar. Failure to control blood glucose levels can result in major issues, including hyperglycaemia, or elevated blood sugar, which can cause long-term consequences like heart, kidney, and nerve damage.

By tracking eating habits and recommending nutritious foods, a dietitian can assist a patient in maintaining blood glucose levels within a safe range.

Losing weight has numerous health advantages and can help most persons with type 2 diabetes better manage their blood sugar. A diabetes diet offers a planned, nourishing approach to safely attain weight loss objectives.

### **1.4 Limitation of the study**

The study was conducted within a short period. The expert persons of hospital were so busy that's why they were not able to provide enough time to Intern students in some cases. Some other limitation was as below.

- The study time was short.
- Some patient was not found cooperative.
- More literature review was required.

## CHAPTER-2

### 2. An overview on BIRDEM

Publications of the BIRDEM Medical Journal occur in July and January. In order to improve patient care in the nation, the Diabetes Association of Bangladesh (DAB) founded the Bangladesh Institute of Research and Rehabilitation in Diabetes, Endocrine, and Metabolic Disorders (BIRDEM) Academy in 1986. The academy's goal is to produce skilled workers in the field of endocrinology and metabolism. A postgraduate facility of BIRDEM General Hospital, BIRDEM Academy offers postgraduate education to recent medical graduates. Currently, BIRDEM offers around 18 (eighteen) residency and non-resident postgraduate programs at Bangabandhu Sheikh Mujib Medical University (BSMMU) and the University of Dhaka, including MD, MS, M.Phil., diploma, and Ph.D. programs in a variety of fields. Since 2011, BIRDEM Academy has published the BIRDEM Medical Journal twice a year in January and July.

#### **Mission:**

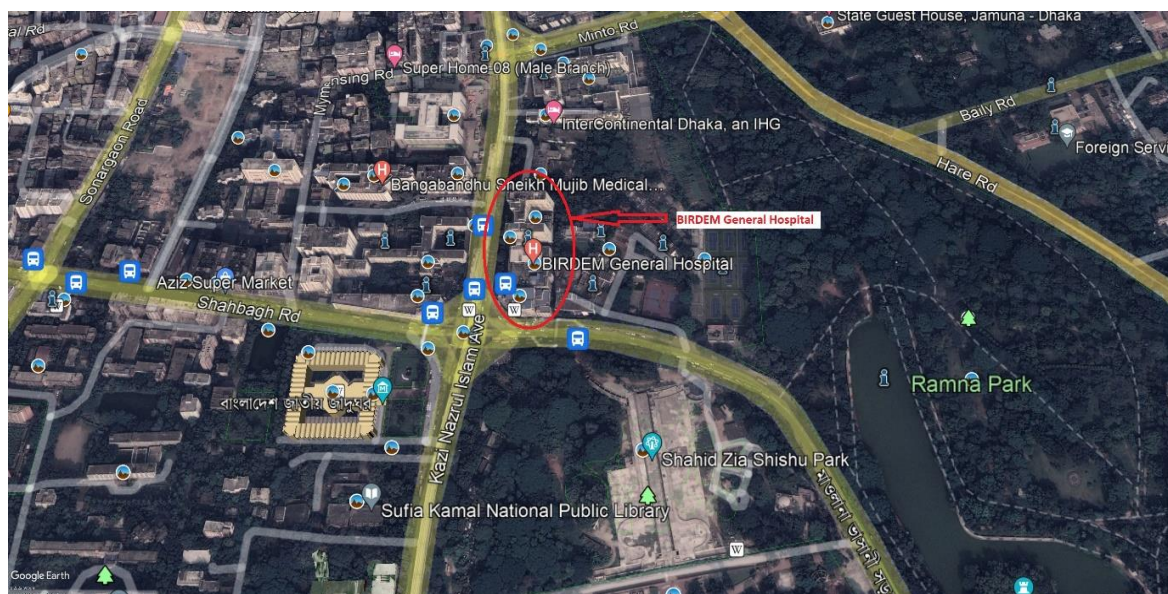
1. Generating requisite specialized quality manpower who will be of high ethical standards for manning these institutions as well as for the country.
2. Specialized manpower are to make available for providing not only diabetic healthcare but also other specialized Medicare.
3. To hold the leadership in healthcare by dedicated and transparent management system of the institution.

#### **Vision:**

1. To make the health care service affordable for all class of people of the country.
2. Making skilled and specialized manpower in different disciplines of healthcare to provide the treatment service for all patients.
3. To facilitate a world class academic environment and postgraduate medical education for graduate trainee in BIRDEM General Hospital.

### 2.1 Location

BIRDEM one of the largest hospitals of Bangladesh for Diabetic patients is located at 122, Kazi Nazrul Islam Avenue, Shahbagh, Dhaka-1000. It is situated at the heart of capital and the transportation facilities are enriched to access the hospital. The exact location of BIRDEM General hospital has been shown in **Figure 1**.



**Figure 1:** Location of Intern Study area (BIRDEM General Hospital)

## 2.2 History

Under the direction of national professor Muhammad Ibrahim, the Diabetic Association for Pakistan (subsequently known as the Bangladesh Diabetic Association) was established in February 1956. He began providing outpatient diabetes services at the association after offering the association use of a ground floor room in his Segunbagicha, Dhaka, residence. The group was given land in Segunbagicha for a hospital by the government when Bangladesh was still a part of Pakistan. The BIRDEM hospital was established in Shahbagh in 1980. The BIRDEM-2 hospital opened its doors in Segunbagicha in 2013.

## 2.3 Present status of BIRDEM

Located in Shahbagh, Dhaka, BIRDEM (Bangladesh Institute of Research and Rehabilitation in Diabetes, Endocrine, and Metabolic Disorders) is a multi-sectoral medical facility, research center, and educational institution. Established in 1980 on a government plot and funded by the government, this central institution of the Diabetic Association of Bangladesh (DAB) is housed in three huge multi-story buildings. Located in a 15-story facility, the hospital now has 542 beds available, 80 of which are designated for free for low-income diabetic patients. Approximately 3,000 individuals come in each day on average for checkups. It is one of Bangladesh's biggest health complexes, offering nearly every kind of clinical and diagnostic service. The hospital employs highly qualified personnel and state-of-the-art equipment to maintain nearly every area of clinical medical science. While diabetics and other endocrine patients are usually given precedence, the in-patient departments now resemble practically a regular hospital. A dedicated research department employing full-time staff is maintained by BIRDEM. The research is carried out in association with a number of national and international research institutions.

All registered diabetic patients receive comprehensive diabetic care at no cost through BIRDEM's clinical services. The money raised through the "cross financing" system—that

is, by providing diagnostic and medical care to other patients is used to provide diabetic patients with free medical care. The patients have a right to medical supervision, consultations, and diabetic education, which includes social assistance, basic health information, dietary guidance, and rehabilitation. Insulin, oral hypoglycemics agents, and medications are provided free of charge or at a reduced cost as needed.

The BIRDEM Academy was founded in 1986 with the goal of supplying the nation's medical institutions, notably BIRDEM, with a sufficient number of qualified workers. The Academy offers diploma and degree programs in Endocrine Medicine, including DEM, MPhil, MD, and PhD. In addition, post-graduate courses are offered in critical care medicine, anaesthesia, general surgery, ophthalmology, medicine, gynaecology, and obstetrics, among other topics. As a WHO Collaborating Centre for Developing Community Oriental Program for Diabetes Prevention and Control, BIRDEM was acknowledged in 1982. This is the first acknowledged organization of its sort outside of Europe.

The National Council of the Diabetic Association of Bangladesh appoints a Board of Management, which is led by the Director General of the BIRDEM. The BIRDEM hospital unit was rebranded as BIRDEM General Hospital lately, changing the public's perception that it only offers Medicare for those with diabetes.

## 2.4 Treatment Facilities

Now a days BIRDEM becomes the central point for the treatment of diabetic all over the country. It is enriched with advance medical and surgical equipment along with modern technologies. All most all kind of lab test and modern lab equipment area also available for detecting the particular disease of patients. Highly qualified doctor, nurses and supporting staff are providing an excellent service to the patients. All kind of disease associated with diabetic are also being treated here with high successful rate. All type of simple to critical surgery are being conducting here in greater number. There are different department and unit to provide service in an easier way. The separate departments and units are shown in following **Table-1**.

**Table-1:** Departments and Units of BIRDEM General Hospital.

|                                                                             |                                                        |
|-----------------------------------------------------------------------------|--------------------------------------------------------|
| Medicine Emergency unit                                                     | Department of Endocrinology                            |
| Department of Internal Medicine                                             | Department of Internal Medicine and Neurology (I & II) |
| Department of Gastrointestinal, Hepatobiliary & pancreatic Disorders (GHPD) | Department of critical care medicine (CCM)             |
| Department of nephrology and Dialysis (Unit-I)                              | Department of cardiology                               |
| Department of Nephrology and dialysis (Unit-II)                             | Department of Diet and Nutrition                       |
| Department of Nephrology and Dialysis (Unit-III)                            | Department of Physical Medicine & Rehabilitation       |

|                                                            |                                              |
|------------------------------------------------------------|----------------------------------------------|
| Department of Dental Surgery                               | Department of social Welfare                 |
| Department of Dermatology                                  | Department of the clinical physicians        |
| Pharmacology and cell biology                              | Transfusion medicine and clinical hematology |
| Biochemistry and molecular biology and laboratory medicine | Endocrinology                                |
| Histopathology                                             |                                              |

## CHAPTER-3

### 3. Learning Outcome

The learning experience was very effective and fruitful for us which was also realistic. This opportunity enhanced our knowledge and skill. We were introduced with some new terminologies and ways of solving problem. We observed the application of dietary plan very closely as well the effectiveness. Medication or external insulin taking is not only the proper treatment of diabetic patient. A diabetic patient must have to be concerned about his/her diet for leading a quality life. In this part nutritionist/dietitian has a great scope to work for a great number people who are suffering from diabetic for long or short period of time. The details learning from the Intern Study have been mentioned below.

#### 3.1 Direct conversation with patient

The way of conversation with the patient is like an art. It was a great lesson for us. Some of mannerism are very important during the conversation with patient as below.

- Greeting to patient with smile their name at the moment of meet or sudden meet.
- Not underestimating a small talk during sudden meet.
- Giving respect and time that patient deserve.
- Being attentive while patient is taking.
- Asking open question including friends and family.
- Using of right tone during talking.
- Sitting beside the patient during conversation.
- Using of language based on patient categories.
- Letting the patient to speak enough.

#### 3.2 Study on diet chart

During the Intern Study it was an opportunity to monitor approximately twenty-five patients closely among those 20 patients were common and available during study period. The diet chart followed by them was the point of focus for us. Diet chart was fixed on the weight, height, and intensity of blood glucose level. Diet charts of three different amount of kilocalorie were followed by patient. The diet charts of 1200, 1400 and 1600 kilocalories are presented below in **Table-2, 3 and 4**.

**Table-2:** Diet chart of 1200 kilocalorie followed by patient at BIRDEM Hospital.

| Meal                    | Food              | Serving | Amount    |     |
|-------------------------|-------------------|---------|-----------|-----|
|                         |                   |         | Household | gm  |
| Breakfast               | Whole wheat Flour | 2       | 2 medium  | 90  |
|                         | Ruti              | 1       | 1 medium  | 50  |
|                         | Egg               | 2       | 2 cups    | 200 |
|                         | vegetable         |         |           |     |
| Snacks<br>(Mid-morning) | Milk (low fat)    | 1       | 1 cup     | 60  |

| Meal                        | Food                | Serving | Amount        |             |
|-----------------------------|---------------------|---------|---------------|-------------|
|                             |                     |         | Household     | gm          |
|                             | bread               | 1       | 1 piece       | 30          |
| Lunch                       | Rice                | 2.5     | 2 cups        | 360         |
|                             | Fish/chicken        | 2       | 2 pieces      | 60          |
|                             | Vegetables          | 1       | 1 cup         | 100         |
| Snacks (After-noon)         | Fat-free yogurt     | 1       | ½ cup         | 30          |
|                             | Fruits              | 3       | 3 small size  | 60          |
| Dinner                      | Ruti                | 3       | 3 pieces      | 120         |
|                             | Meat/Egg/Fish       | 2       | 2 pieces      | 60          |
|                             | Vegetables          | 1       | 1 cup         | 100         |
| Mid-Night                   | Sugar-free biscuits | 1       | 1 medium size | 30          |
| Total calories of the diet= |                     |         |               | 1200 K. Cal |

**Table-3:** Diet chart of 1400 kilocalorie followed by patient at BIRDEM Hospital.

| Meal                        | Food                | Serving | Amount                           |                     |
|-----------------------------|---------------------|---------|----------------------------------|---------------------|
|                             |                     |         | Household                        | gm                  |
| Breakfast                   | Whole wheat Flour   | 3       | 3 medium                         | 120                 |
|                             | Ruti                | 1       | 1 medium                         | 50                  |
|                             | Egg                 | 2       | 2 cups                           | 200                 |
|                             | vegetable           |         |                                  |                     |
| Snacks (Mid-morning)        | Milk (low fat)      | 1       | 1 cup                            | 60                  |
|                             | bread               | 1       | 1 medium                         | 600                 |
| Lunch                       | Rice                | 2.5     | 2 cups                           | 360                 |
|                             | Fish/chicken        | 2       | 2 pieces                         | 60                  |
|                             | Vegetables          | 1       | 1 cup                            | 100                 |
| Snacks (After-noon)         | Fat-free yogurt     | 1       | ½ cup                            | 30                  |
|                             | Fruits              | 2       | 2 small sized                    | 120                 |
| Dinner                      | Ruti                | 2.5     | 2 cups                           | 120                 |
|                             | Meat/Egg/Fish       | 2       | 2 pieces                         | 150                 |
|                             | Vegetables          | 1       | 1 cup                            | 150                 |
| Mid-Night                   | Sugar-free biscuits | 1       | 1 medium size<br>or 2 small size | 30                  |
| Total calories of the diet= |                     |         |                                  | 1400<br>kilocalorie |

**Table-4:** Diet chart of 1600 kilocalorie followed by patient at BIRDEM Hospital.

| Meal                               | Food                | Serving | Amount                           |                             |
|------------------------------------|---------------------|---------|----------------------------------|-----------------------------|
|                                    |                     |         | Household                        | gm                          |
| Breakfast                          | Whole wheat Flour   | 3       | 3 mediums                        | 120                         |
|                                    | Ruti                | 1       | 1 medium                         | 50                          |
|                                    | Egg                 | 2       | 2 cups                           | 200                         |
|                                    | Vegetable           |         |                                  |                             |
| Snacks<br>(Mid-morning)            | Milk (low fat)      | 1       | 1 cup                            | 60                          |
|                                    | Toast biscuit       | 1       | 1 medium                         | 30                          |
| Lunch                              | Rice                | 2.5     | 2 cups                           | 360                         |
|                                    | Fish/chicken        | 4       | 4 pieces                         | 300                         |
|                                    | Vegetables          | 1       | 1 cup                            | 100                         |
| Snacks (After-noon)                | Fat-free yogurt     | 1       | 1 cup                            | 60                          |
|                                    | Fruits(seasonal)    | 3       | 3 small sized                    | 60                          |
| Dinner                             | Ruti                | 3       | 3 pieces                         | 120                         |
|                                    | Meat/Egg/Fish       | 2       | 2 pieces                         | 60                          |
|                                    | Vegetables          | 1       | 1 cup                            | 200                         |
| Mid-Night                          | Sugar-free biscuits | 1       | 1 medium size<br>or 2 small size | 30                          |
| <b>Total calories of the diet=</b> |                     |         |                                  | <b>1600<br/>kilocalorie</b> |

For planning a healthy diet chart, a nutritionist considers different food value and its amount. Different food values have various function for human body. To ensure all aspects of nutrition, a dietitian design a specific diet chart for specific person. The functions of food values for human body are presented below in **Table-5**.

**Table-5:** Role of protein, carbohydrate, fats, and vitamin for human body

| Proteins for human health                                                                                                                                                             | Carbohydrates for human health                                                                                                                                                                                                       | Fats for human health                                                                                                                                                      | Vitamins and minerals for human health                                                                                                    |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>- bolstering and mending the body's essential parts, like the muscles and bones</li> <li>- Sustaining proper pH levels in the blood</li> </ul> | <ul style="list-style-type: none"> <li>- The fastest energy source and the only one that can supply energy to red blood cells and brain cells.</li> <li>- Take action to prevent constipation</li> <li>Dietary fibers are</li> </ul> | <ul style="list-style-type: none"> <li>- preserving the flow of fat-soluble substances into and out of cells via cell membranes, particularly hormones and fat-</li> </ul> | <ul style="list-style-type: none"> <li>- Regulating vital processes in the body</li> <li>- Building the body's basic compounds</li> </ul> |

| <b>Proteins for human health</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | <b>Carbohydrates for human health</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | <b>Fats for human health</b>                                                                                                                                                                                                                                                                                                     | <b>Vitamins and minerals for human health</b>                                                    |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>- Generating enzymes and hormones</li> <li>- Protecting the body from diseases and infections</li> <li>- Regulating body processes to maintain fluid balance (inside and outside the cells)</li> <li>- The body uses proteins as a backup energy source in the event that fats and carbs were excluded from the diet. The kidneys become fatigued when we rely solely on protein for energy, though.</li> <li>- providing glucose to the body in situations where blood glucose and carbs are low. The liver and kidneys use a process known as gluconeogenesis to convert certain amino acids into glucose.</li> </ul> | <ul style="list-style-type: none"> <li>carbohydrates that help the body transport its waste products through the digestive system, thereby avoiding constipation.</li> <li>- removing poisons from the body. certain medications and poisons can be combined with glutaric acid to be released from the body.</li> <li>- bringing some good bacteria into action. In order to produce B group vitamins and enhance the absorption of iron and calcium, lactose plays a significant role in promoting the growth of good gut flora.</li> <li>- Improving the flavor of the food.</li> </ul> | <ul style="list-style-type: none"> <li>soluble vitamins (A, D, E, and K).</li> <li>- synthesizing significant chemicals. A vital component of the body's cell membranes is cholesterol. It can also change into related substances including bile salts, vitamin D, and certain hormones (estrogen and testosterone).</li> </ul> | <ul style="list-style-type: none"> <li>- Maintaining the health of the body's systems</li> </ul> |

People can easily make a healthy diet by choosing healthy carbohydrates, fibre rich foods, fish and good fat as food. The list nutrition rich food is presented below in **Table-6**.

**Table-6:** List of nutrition rich food for planning a healthy diet

| Healthy carbohydrates          | Fiber richer foods             | Food fat   | Fish for Omega-3 |
|--------------------------------|--------------------------------|------------|------------------|
| Fruit                          | Vegetable                      | Nut oil    | Salmon           |
| Vegetable                      | Nuts                           | Olive oil  | Hilsa            |
| Legumes such as beans and peas | Whole grains                   | Canola oil | Pangas           |
| Low fat dairy products         | Legumes such as beans and peas | Peanut oil | Shar Puti        |
|                                |                                | Ghee       |                  |
|                                |                                | Cheeses    |                  |

Water plays a very important role in human body without which life is not possible. Too much or too less water taking both can be deleterious for the body. The purity of water is another important issue for drinking. For a good health every have to must ensure pure drinking water containing minerals. Water contributes in human body in following ways.

- Regulating normal body temperature
- It makes the joints smooth and acts as a pressure reliever.
- Protecting the spinal cord and other sensitive organs.
- Detox the body and dispose of wastes by urination, sweat and bowel movement.

People in Bangladesh are frequently afflicted by water-borne illnesses such as cholera, dysentery, hepatitis, and diarrhea. The most prevalent virus-related water-borne illness is diarrhea. This virus can cause symptoms such as fever, stomach ache, and regular loose faces when it contaminates water. So, assurance of pure drinking water can keep the people also safe from water borne diseases.

### 3.3 Lab report analysis

Admitted patients were being gone through different kind of blood test as well as many other tests for monitoring and evaluating their health condition. A1C, fasting blood sugar, insulin resistance, glucose tolerance, random blood sugar, glucose screening, and other tests are frequently performed on diabetes patients. A glycated haemoglobin (A1C) test should be performed at least twice a year for those with diabetes, according to the American Diabetic Association (ADA). Your average blood sugar level over the previous two to three months is shown by this test.

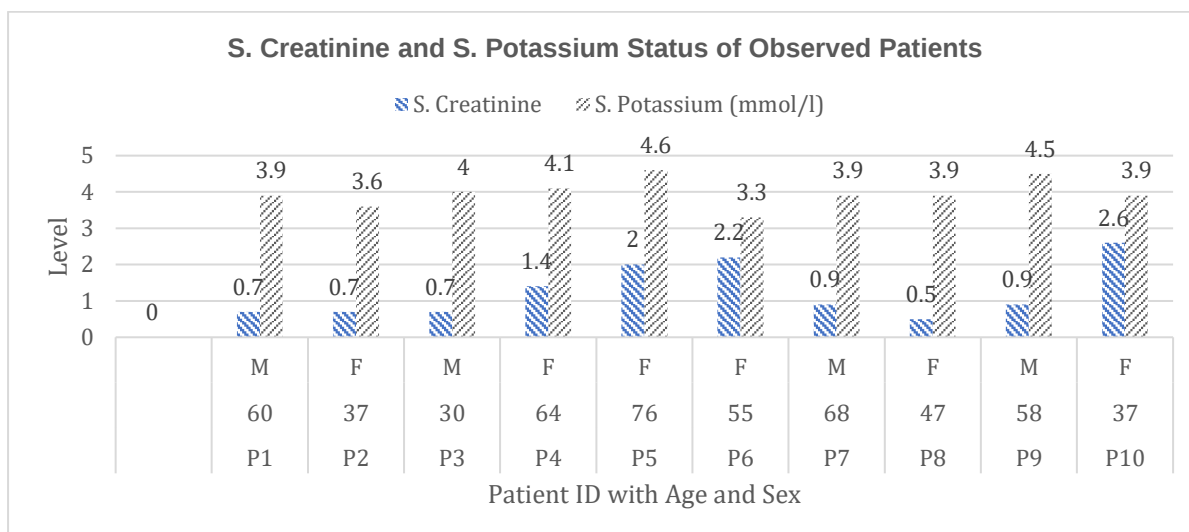
A great opportunity was available to analysis those test report in presence of patients which was a realistic knowledge gathering. Most common tests (S. Creatinine, S. Sodium, S. Potassium etc.) were carried out for observing the Kidney condition of the patients due to suffering from diabetic for a long period. Collected data during the Intern Study period is presented below in **Table-7**.

**Table-7:** Most common test to evaluate Kidney condition of patient.

| ID           | Patient Name     | Age | Sex | S. Creatinine (mg/dl) | S. Potassium (mmol/l) | S. Sodium (mmol/l) | S. Chloride (mmol/l) |
|--------------|------------------|-----|-----|-----------------------|-----------------------|--------------------|----------------------|
| P1           | Md. Wajed Ali    | 60  | M   | 0.7                   | 3.9                   | 138                | 102                  |
| P2           | Anusree Mazumder | 37  | F   | 0.7                   | 3.6                   | 139                | 103                  |
| P3           | Belal Uddin      | 30  | M   | 0.7                   | 4.0                   | 135                | 102                  |
| P4           | Shakina          | 64  | F   | 1.4                   | 4.1                   | 141                | 101                  |
| P5           | Mrs. Amena Begum | 76  | F   | 2.0                   | 4.6                   | 131                | 98                   |
| P6           | Kulsum Begum     | 55  | F   | 2.2                   | 3.3                   | 134                | 103                  |
| P7           | Md. Shah Alam    | 68  | M   | 0.9                   | 3.9                   | 139                | 109                  |
| P8           | Baby Akter       | 47  | F   | 0.5                   | 3.9                   | 134                | 99                   |
| P9           | Nurul Haque      | 58  | M   | 0.9                   | 4.5                   | 133                | 101                  |
| P10          | Sultana Razia    | 37  | F   | 2.6                   | 3.9                   | 130                | 102                  |
| Normal Range |                  |     |     | 0.67-1.3              | 3.5-5.2               | 136-148            | 98-108               |

The creatinine blood test measures the quantity of creatinine in the blood. This test's objective is to evaluate kidney function. Another technique to measure creatinine is by urine testing. Measurements of serum creatinine are commonly used to evaluate renal function.

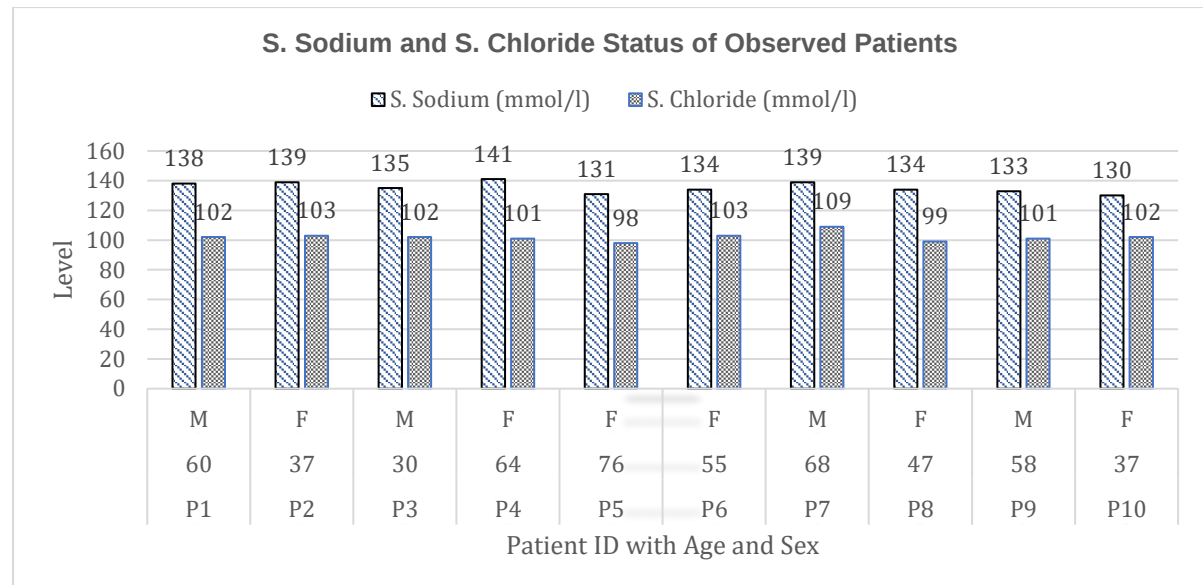
A few symptoms of low potassium include exhaustion, cramping in the muscles, and weakness. Potassium accumulates in the body because failing kidneys are unable to eliminate extra potassium from the body. Hyperkalaemia, or elevated potassium in the blood, is a condition that can develop in individuals with late stages of chronic kidney disease (CKD). A graphical presentation of collected data regarding S. creatinine and S. potassium is presented below.

**Figure 2:** Graphical view of collected data during Intern study period.

Reducing salt intake may also assist to decrease the progression of CKD. Filtering salt from the body and into the urine is one of the kidneys' vital functions.

One of the electrolytes found in human blood is chloride. Chloride blood tests determine whether blood levels are appropriate for a given health concern. An excessive amount of

chloride in the blood can be caused by a variety of things, such as vomiting, dehydration, and specific medical disorders. The graphical view of collected data during Intern study period regarding the level of Sodium and Chloride is presented below.



**Figure 3:** Graphical view of collected data during Intern Study period.

Overall, the lab report analysis study was very realistic way of learning. Among ten patient six were female and rest were male. In our country female are most commonly housewife and they are not interested in regular morning walk, exercise and many other physical activity. So it is very easy to be calculated that female are in greater risk for having diabetic in perspective of Bangladesh.

### 3.4 Pathetic hazard associated with diabetic

Many critical difficulties or diseases are directly and indirectly associated with diabetic. Heart and Blood Vessel (Cardiovascular) Diseases, Nerve Damage, Kidney Disease, Eye Damage, Foot Damage, Skin and Mouth Difficulties etc. are most common of long list. Diabetic is called the mother of all diseases. During the study some patients were found with associated hazard who are suffering from diabetic for a long time or more than ten years. The experienced related difficulties of diabetic patients are discussed below in detail.

#### 3.4.1 Diabetic Nephropathy

One of the most dangerous side effects of both type 1 and type 2 diabetes is diabetic nephropathy. Diabetic renal disease is another name for it. Diabetic nephropathy impairs the kidneys' capacity to eliminate waste materials and surplus fluid from the body as they normally would. The best defence against diabetic nephropathy is sufficient management of your high blood pressure and diabetes, together with a balanced lifestyle. End-stage renal disease, also known as kidney failure, can result from kidney disease. Dialysis is a potentially fatal illness. Dialysis or a kidney transplant are the available therapeutic options at present time.

#### 3.4.1.1 Diagnosis

As part of your diabetes treatment plan, routine testing typically identifies diabetic nephropathy. It is advised to start screening for diabetic nephropathy five years after being diagnosed with type 1 diabetes. Screening will start as soon as you receive a type 2 diabetes diagnosis.

**Routine screening tests may include:**

- **Urinary Albumin Test:** Your urine's blood protein albumin can be found using this test. The kidneys normally do not remove albumin from the blood. An excessive amount of protein in the urine may be a sign of impaired kidney function.
- **Albumin/Creatinine Ratio:** A chemical waste product that healthy kidneys remove from the blood is called creatinine. An additional indicator of kidney function is the albumin/creatinine ratio, which quantifies the amount of albumin in a urine sample in relation to the amount of creatinine.
- **Glomerular Filtration Rate (GFR):** The glomerular filtration rates a measure of how rapidly blood is filtered by the kidneys can be calculated from the amount of creatinine in a blood sample. Poor kidney function is indicated by a low filtration rate.
- **Imaging Tests:** Doctor may use ultrasound and x-rays to evaluate the size and structure of your kidneys. To ascertain the efficiency of blood circulation in your kidneys, you could also have a magnetic resonance imaging (MRI) or CT scan. In certain situations, further imaging tests might be used.
- **Kidney Biopsy:** To obtain a sample of kidney tissue, your doctor might advise a kidney biopsy. A local anaesthetic, or numbing agent, will be administered to you. Subsequently, your physician will extract tiny kidney tissue fragments for microscopic inspection using a fine needle.

#### 3.4.1.2 Symptoms

There are some common symptoms of diabetic nephropathy basically found in the patient who were suffering from diabetic mellitus for a long time. These symptoms are as follows;

- Protein in the urine
- Worsening blood pressure control
- Swelling of feet, ankles, hands or eyes
- Increased need to urinate
- Reduced need for insulin or diabetes medicine
- Fatigue
- Persistent itching
- Loss of appetite
- Shortness of breath

#### 3.4.1.3 Risk factor

Some risk factor is very closely associated with diabetic nephropathy and some bad habits are also can be a culprit for nephropathic diseases in a long term. The risk factors are as follows.

- Uncontrolled high blood sugar (hyperglycaemia)

- Uncontrolled high blood pressure (hypertension)
- Being a smoker
- High blood cholesterol
- Obesity
- A family history of diabetes and kidney disease

#### **Complications:**

- Fluid retention may result in elevated blood pressure, enema in the arms and legs, or fluid accumulation in the lungs (Pulmonary Enema).
- A rise in potassium levels in your blood (Hyperkalaemia)
- Cardiovascular disease, a condition that affects the heart and blood vessels and can result in stroke.
- Foot sores, diarrhea and other problem related to damaged nerves and blood vessels.
- Pregnancy complication that carries risks for the mother and developing foetus.

#### **3.4.1.4 Prevention**

To prevent this dangerous issue, we need to follow some common and basic healthy practises which can be helpful as prevention measure to protect the difficulties.

- Keep regular appointments for diabetes management.
- Treat your diabetes.
- Manage high blood pressure or other medical conditions.
- Maintain a healthy weight.
- Don't smoke.

#### **3.4.2 Diabetic Neuropathy**

Diabetic neuropathy is one type of nerve damage that can occur in a diabetic. High blood sugar can cause nerve injury anywhere in the body. Nerves in the legs and feet are usually affected by diabetic neuropathy. Diabetic neuropathy is a potentially fatal side effect of diabetes that affects up to 50% of people with the illness. However, diabetic neuropathy may usually be prevented or its growth limited with regular blood sugar management and a healthy lifestyle.

##### **3.4.2.1 Diagnosis**

A medical history and physical examination can be used to identify diabetic neuropathy. The most frequent clinical signs include discomfort, loss of balance, and malfunction of the lower limbs. The diagnosis is made in those who have pain or numbness in weakness. Your health care provider typically checks your:

- Overall muscle strength and tone
- Tendon reflexes
- Sensitivity to touch, pain, temperature and vibration

Your healthcare practitioner may prescribe certain tests or do them in addition to the physical examination to aid in the diagnosis of diabetic neuropathy, such as:

- **Filament testing:** To measure your sensitivity to touch, certain parts of your skin are touched with a soft nylon fibre.
- **Sensory testing:** This non-invasive test measures your nerve's sensitivity to vibration and temperature changes.

- **Nerve conduction testing:** The speed at which electrical signals are conducted by the nerves in your arms and legs is measured by this test.
- **Electromyography:** Tests for nerve conditions are frequently conducted in conjunction with needle testing. Your muscles' electrical discharges are measured by it.
- **Autonomic testing:** To find out how your blood pressure fluctuates within the usual range when you are in various postures, you could undergo specialized testing.

#### 3.4.2.2 Symptoms

Some common symptoms of diabetic neuropathy are found into the patient of diabetic which are as follows.

- Numbness or reduced ability to feel pain or temperature changes.
- Tingling or burning feeling.
- Sharp pains or cramps.
- Muscles weakness.
- Extreme sensitivity to touch- for some people, even a bedsheet's weight can be painful.
- Serious foot problem, such as ulcers, infection and bone and joint damage.

#### 3.4.2.3 Causes of neuropathy

Chronically elevated blood sugar levels are the cause of diabetic neuropathy. Nerve injury can also result from other sources, such as:

- Damage to the blood vessels caused by high cholesterol levels
- Mechanical injury such as injuries caused by carpal tunnel syndrome
- Lifestyle factors such as smoking or alcohol use

Neuropathy can also result from low vitamin B12 levels. Vitamin B12 levels can be lowered by the common diabetes drug metformin. To find out whether you have any vitamin deficiencies, you can ask your doctor for a basic blood test.

#### **Complications:**

- Hypoglycaemia unawareness
- Loss of a toe, foot or leg
- Urinary tract infections and urinary incontinence
- Sharp drops in blood pressure
- Digestive problems
- Sexual dysfunction
- Increased or decreased sweating

#### 3.4.2.4 Prevention

Some preventive measure should take to minimize the risk of diabetic neuropathy as mentioned below. In this case anybody having diabetic must have to control the glucose level in a satisfactory level.

- Blood sugar management
- Foot care
- Check your feet everyday

- Keep your feet clean and dry
- Moisturize your feet
- Trim your toenails carefully
- Wear clean, dry socks
- Wear cushioned shoes that fit well

### **3.4.3 Diabetic Gastropathy**

The term "Diabetic Gastropathy" refers to a group of neuromuscular disorders of the stomach, including variations in the tone, contractility, and myoelectric activity of the stomach in diabetic patients. These anomalies include Frank Gastroparesis, Antral Hypomotility and Tachygastria.

#### **3.4.3.1 Diagnosis**

The clinical presentation is typically the basis for the diagnosis of diabetic gastropathy, which is then confirmed by tests assessing the anatomy and physiology of the upper gastrointestinal tract. An abdominal CT scan, barium tests, and endoscopy should be used to rule out mechanical obstruction of the stomach or small bowel.

#### **3.4.3.2 Symptoms**

Patients with diabetic gastropathy frequently have symptoms like bloating in the abdomen, pain in the abdomen, poor digestion, feeling full after only a few bites, and vomiting up undigested food that was consumed several hours previously. The patient may also experience the following symptoms of gastropathy.

- Chronic nausea
- Vague epigastric discomfort
- Postprandial fullness
- Early satiety
- Vomiting
- Weight loss
- Chest pain
- Heartburn

#### **3.4.3.3 Causes of gastropathy**

Medical terminology for stomach disorders, particularly those affecting the mucosal lining of the stomach, is gastropathy. There are numerous varieties of gastropathy, some mild and some more severe. A few fundamental causes of gastropathy are listed below.

- Celiac disease
- Chemotherapy and radiation therapy
- Inflammatory disorders of the gastrointestinal system, such sarcoidosis and Crohn's disease
- Food allergies
- Other than H. pylori, infection with viruses, parasites, fungi, and bacteria, usually in individuals with compromised immune systems
- Portal hypertension

### **Complication of Diabetic Gastropathy:**

- **Peptic Ulcers:** Sores on the lining of your stomach or duodenum are known as peptic ulcers. Peptic ulcers can be brought on by acute erosive gastropathy. Peptic ulcers are also more likely to occur if you have reactive gastropathy, particularly from NSAIDs, and H. pylori gastritis.
- **Anaemia:** Gastritis due to H. pylori might make it difficult for the body to absorb vitamin B12. Pernicious Anaemia results from the body's inability to produce enough healthy red blood cells when vitamin B12 levels are low.
- **Atrophic Gastritis:** Atrophic gastritis can result from chronic gastritis, most commonly from H. pylori and autoimmune gastritis. Chronic inflammation in atrophic gastritis causes the stomach lining's glands that produce acid and enzymes to disappear. Stomach cancer development has also been connected to atrophic gastritis.
- **Stomach Cancer:** The risk of developing growths in the stomach lining is increased by autoimmune gastritis and chronic H. pylori gastritis. These growths could be potentially cancerous or benign. Gastritis caused by Helicobacter pylori raises the risk of gastric mucosa-associated lymphoid tissue (MALT) lymphoma, an adult non-Hodgkin lymphoma. Certain forms of stomach cancer can be avoided with an early H. pylori diagnosis and therapy.

#### 3.4.3.4 Prevention

Having diabetic for a long time leads the gastropathy which is a very dangerous situation of stomach. After having diabetic one should take some necessary steps for preventing diabetic gastropathy as followed.

- Keeping blood glucose levels within the target range
- Meal planning
- Physical activity
- Medicines
- Choosing vegetable
- Avoiding fatty or oily or rich food

#### 3.4.4 Diabetic foot

An excessively high blood glucose, or blood sugar, level is known as diabetes. Consumed foods provide glucose. Your body's cells require glucose as an energy source. Insulin is a hormone that facilitates the uptake of glucose into your cells. Foot issues are common in people with diabetes. These might appear gradually as a result of the blood vessels and nerves in the foot being harmed by high blood sugar.

##### 3.4.4.1 Diagnosis

A diabetic foot can be diagnosis by observing physical condition of patient who is suffering from diabetic for a long period of time. Diabetic foot can be diagnosed by below sign of patient foot.

- **Fungal infection of nails:** A fungal infection can cause your nails to grow thick, brittle, discoloured (opaque or yellowish-brown), and possibly split off from the remainder of your nail. It is possible for your nail to crumble.

- **Calluses:** A callus is a hard skin accumulation that typically appears on the foot's bottom. An unequal distribution of weight leads to calluses. Calluses may also result from an issue with the skin or from shoes that fit badly.
- **Corns:** A corn is an accumulation of tough skin between or close to a toe's bony area. Shoes that press on your toes or create friction between them may be the source of corns.
- **Blisters:** When your shoes brush against the same area of your foot, blisters may develop. Blisters can develop into infections when shoes are worn improperly fitting or without socks.
- **Bunions:** When your big toe bends toward your second toe, a bunion develops. The area where your big toe and foot meet frequently gets callused and inflamed. This region could also protrude and harden. You may require surgery to realign your toes if the bunion is causing you significant discomfort or disfigurement.
- **Dry skin:** Dry skin is prone to cracking, which lets bacteria in. To maintain soft, moisturized skin, use moisturizing lotions and soaps. Consult your physician about which to use.
- **Diabetic ulcers:** A deep sore or a rupture in the skin is called a foot ulcer. They might get sickened. Foot ulcers can result from small cuts, slow-healing wounds, or rubbing against poorly fitting shoes.
- **Ingrown toenails:** When the nail's edges dig into your flesh, you get ingrown toenails. They put pressure and hurt around the margins of the nails. Your skin may become injured by the nail's edge, which could result in redness, swelling, pain, drainage, and infection.
- **Plantar warts:** Plantar warts resemble calluses on the heel or ball of the foot. They could seem to have little black dots or pinholes in the middle.

#### 3.4.4.2 Symptoms

Some common symptoms of diabetic foot are as follows.

- Increase swelling of legs or feet
- Change of skin colour.
- Burning tingling sensation.
- Lack of feeling in the feet.
- Numbness in the toes.
- Ingrown toenails.
- Slow to heal sores.
- Dry cracks in the skin, especially around the heel.
- Previous foot ulceration/amputations

#### 3.4.2.3 Causes of diabetic foot

The patients who were suffering from diabetic for a long period of time are under risk of having diabetic foot. Some more other causes are as follows.

- Peripheral vascular disease
- Neuropathy
- Poor glycaemic control

- Cigarette smoking
- Diabetic nephropathy

By far, the two most common risk factors are neuropathy and peripheral vascular disease.

#### 3.4.4.4 Prevention

Some basic preventive method can be taken by patients those are mostly personal hygiene related. Some are listed below.

- Putting feet up when sitting
- Wiggle toes for a few minutes throughout the day. Move ankles up and down and in and out to help blood flow in feet and legs
- Not wearing tight socks or elastic stockings
- Be more physically active
- Stop smoking
- Inspect your feet daily
- Washing feet by warm water
- Gentle bathing of feet
- Moisturizing feet but not between toes
- Cut nails carefully and straight across
- Never trim corns or calluses
- Wearing clean, dry socks
- Avoid wearing the wrong type of socks

These are the basic tips should be followed by person who is suffering from diabetic foot.

### 3.5 Findings

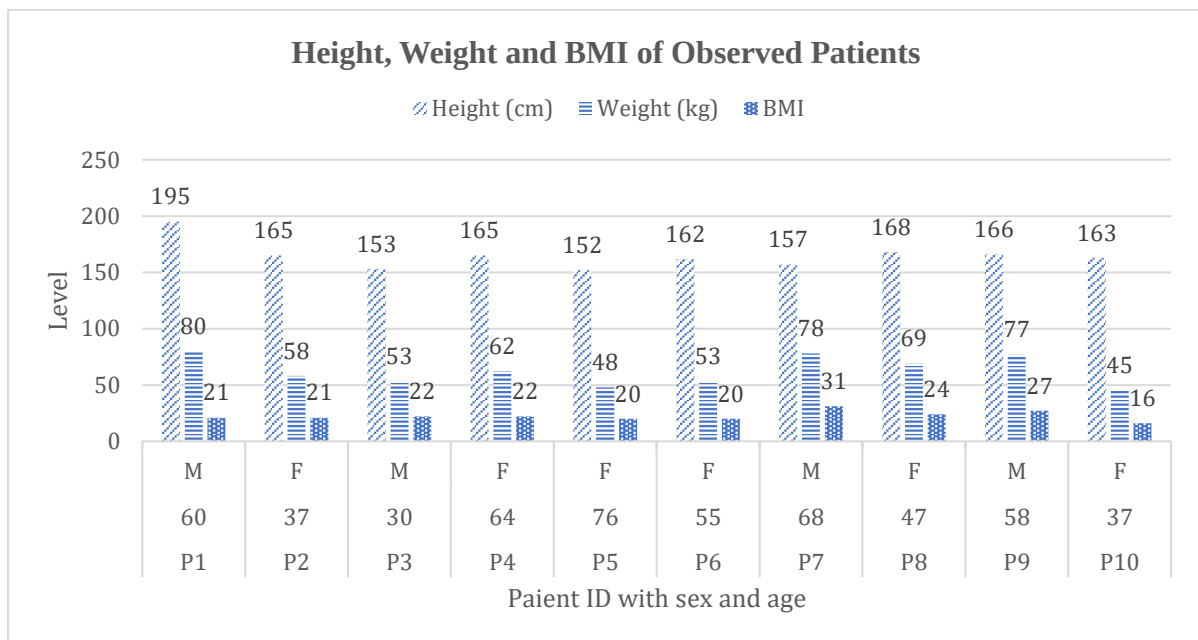
It was observed that most of the patients were aged more than 40 years and they did not maintain a healthy life style as well as were not concerned on diet. The hazard of diabetic was very pathetic. During the study period twenty-five patients were closely observed among whose twenty patients were available for whole study period. the collected data of ten patients is presented below in **Table-8**

**Table-8:** Details of observed patient during the study period

| ID | Patient Name     | Age | Sex | Height (cm) | Weight (kg) | BMI | BMR  | S. Creatinine(mg/dl ) | S. Sodium (mmol/l) | S. Potassium (mmol/l) |
|----|------------------|-----|-----|-------------|-------------|-----|------|-----------------------|--------------------|-----------------------|
| P1 | Md. Wajed Ali    | 60  | M   | 195         | 80          | 21  | 1723 | 0.7                   | 138                | 3.9                   |
| P2 | Anusree Mazumder | 37  | F   | 165         | 58          | 21  | 1410 | 0.7                   | 139                | 3.6                   |
| P3 | Belal Uddin      | 30  | M   | 153         | 53          | 22  | 1341 | 0.7                   | 135                | 4.0                   |
| P4 | Shakina          | 64  | F   | 165         | 62          | 22  | 1315 | 1.4                   | 141                | 4.1                   |
| P5 | Mrs. Amena Begum | 76  | F   | 152         | 48          | 20  | 1034 | 2.0                   | 131                | 4.6                   |
| P6 | Kulsum Begum     | 55  | F   | 162         | 53          | 20  | 1251 | 2.2                   | 134                | 3.3                   |

| ID  | Patient Name  | Age | Sex | Height (cm) | Weight (kg) | BMI | BMR  | S. Creatinine(mg/dl ) | S. Sodium (mmol/l) | S. Potassium (mmol/l) |
|-----|---------------|-----|-----|-------------|-------------|-----|------|-----------------------|--------------------|-----------------------|
| P7  | Md. Shah Alam | 68  | M   | 157         | 78          | 31  | 1426 | 0.9                   | 139                | 3.9                   |
| P8  | Baby Akter    | 47  | F   | 168         | 69          | 24  | 1510 | 0.5                   | 134                | 3.9                   |
| P9  | Nurul Haque   | 58  | M   | 166         | 77          | 27  | 1522 | 0.9                   | 133                | 4.5                   |
| P10 | Sultana Razia | 37  | F   | 163         | 45          | 16  | 1267 | 2.6                   | 130                | 3.9                   |

Some patients were over weighted and very less were below the standard weight. Weight is an important factor in human health. Maintain a standard weight is the precondition for leading a healthy life. To maintain a healthy weight, one has to concentrate on his diet. So, diet is most significant factor for a healthy life also to keep control the glucose level of a diabetic patient. A graphical view of collected data is presented below.



**Figure 4:** Graphical view of Hight, Weight and BMI of observed patients at BIRDEM.

Six patients were over the age of 50 and rest over 30 years old. Among ten patients 6 were female and remining are male. The highest BIM found for patient-1 is 195 and lowest for patient-5 is 152 and four patients were found over weighted. They were going through treatment process and following a healthy diet chart.

## CHAPTER-4

### 4. Conclusion

To control diabetic a healthy and nutrition rich diet chart should be followed by patients. In our country peoples are very less aware about their diet and health condition. To increase the awareness, awareness building program by government or non-government organization should be well appreciated. In this case primary school, high school, college and other educational institution can play a vital role to increase the awareness regarding food value, nutrition and health for massive community. After being aware about their health, they can easily stay far from many diseases. Peoples who are associated with public health task, they can also play an important role for food choice and diet.

The diabetic community is very large in our country, so dietitian or nutritionist has a great scope to work with them. It is recognised all over the world that a well diet plan can make the diabetic management easier for a patient. So, in prevention of diabetic and management of diabetic, nutritionist has to play a vital role all over the country. If people know which foods are high in fibre, good fat, or carbohydrates, they can choose food with ease. However, everyone should adhere to some basic food safety guidelines, such as chewing food slowly and steadily to enjoy its flavour, eating meals to avoid feeling full, consuming as much colour-rich food as possible each day, and making half of a dish consist of vegetables and fruits.

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## Appendices

### Appendix-A



**Fig A-1:** Entry point of BIRDEM General Hospital



**Fig A-2:** Analysis of diet chart lab report of admitted patient.



**Fig A-3:** Data collection from admitted patient at BIRDEM General Hospital.



**Fig A-4:** Direct conversation with male patient



**Fig A-5:** Direct conversation with a female patient

## Appendix-B

Questionnaire Survey for Admitted Patient  
Department of Nutrition and Food Engineering  
Daffodil International University  
Asulia, Savar, Dhaka

|                      |              |
|----------------------|--------------|
| Case study no: ..... | Year: .....  |
| Session: .....       | Dated: ..... |

### 1.Patient Information

1. Name:
2. Address:
3. Name of Hospital:
4. Admission date:
5. Reason of admission:
6. Ward number:
7. Bed number:
8. Health conditions:
9. Mental status:

### 2.Anthropometric Parameters

- 1) Age:
- 2) Sex:
- 3) Weight:
- 4) Height:
- 5) IMW:
- 6) BMI:
- 7) BMR:

Underweight: yes/no  
Overweight : yes/no

normal : yes/no  
obesity : yes /no

### 3.Nutrition Status:

- <17
- 17-18.5
- 18.6-23
- 23.1-25
- 25.1-29.9
- 30-39.9
- >\_ 40

### 4.Lab / Biochemical Test (Blood) with result

- Blood Glucose (F).....mmol/dl
- Blood Glucose (ABF).....mmol/dl
- HbA1c ..... %
- Albumin ..... mg/dl
- Total protein ..... g/dl
- HDL ..... mg/dl
- LDL ..... mg/dl
- Cholesterol,total.....mg/dl
- Magnesium ..... mmol/l
- phosphate ..... mmol/l
- Calcium ..... mmol/l
- Potassium ..... mmol/l
- Sodium ..... mmol/l
- Serum Chloride..... mmol/l
- Hb ..... g/dl
- Hematocrit ..... %
- SGOT ..... IU/l
- SGPT ..... IU/l
- Creatinine ..... mg/dl
- Urea ..... mg/dl
- STCO2 .....
- Uric Acid ..... mg/dl
- Others .....

### 5. Condition that currently Exist:

- Nausea
- Vomiting
- Diarrhea
- Chewing Difficulties
- Swallowing difficulties
- Constipation
- Diet restriction
- Gas formation
- Test & smell perception

### 6. Supplements:

- Yes
- No

If yes, type,

- Vitamin & minerals
- Vitamins
- Minerals

### 7. Socioeconomic & culture factor :

Monthly family income :  
Religion :  
Education :  
Occupation :  
Living Status :  
Rural/Urban :

### 8. Diet Plan ( Present condition)

Nutritional Status :

|                                                                  |                           |
|------------------------------------------------------------------|---------------------------|
| Occupation                                                       | Carbohydrate ..... gm/day |
| Estimated Energy needs..... Kcal/day                             | protein..... gm/day       |
| Calculated energy Needs(less or add) (300-500kcal)..... kcal/day | Fat..... gm/day           |
| prescribe Total kcal..... kcal/day                               | Fluid..... L/day          |

9. Restrictions :

◊ yes

◊ no

If yes.....

|                                                                                                   |                                                                                          |                                                                                  |
|---------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------|
| <ul style="list-style-type: none"><li>• calories</li><li>• Protein</li><li>• Free Sugar</li></ul> | <ul style="list-style-type: none"><li>• Cholesterol</li><li>• Fat</li><li>• Na</li></ul> | <ul style="list-style-type: none"><li>• K</li><li>• Mg</li><li>• Other</li></ul> |
|---------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------|

### 10. Food Exchange List:

| Food Group                  | Serving | Carbohydrate gm | protein gm | Fat gm | Amount gm | Kcal |
|-----------------------------|---------|-----------------|------------|--------|-----------|------|
| Rice Bread & Nabami Cereals |         |                 |            |        |           |      |
| Pulses                      |         |                 |            |        |           |      |
| Fish/Meat/Egg               |         |                 |            |        |           |      |
| Vegetables                  |         |                 |            |        |           |      |
| Milk & Milk Product         |         |                 |            |        |           |      |
| Fruits                      |         |                 |            |        |           |      |

|       |  |  |  |  |  |  |
|-------|--|--|--|--|--|--|
| Oil   |  |  |  |  |  |  |
| Total |  |  |  |  |  |  |

#### 11. Menu Planning:

| Meal                 | Food | serving | Amount household | gm |
|----------------------|------|---------|------------------|----|
| Breakfast            |      |         |                  |    |
| Snacks (Mid-morning) |      |         |                  |    |
| Lunch                |      |         |                  |    |

|                       |  |  |  |  |
|-----------------------|--|--|--|--|
| Snacks<br>(Afternoon) |  |  |  |  |
| Dinner                |  |  |  |  |
| Late night<br>snacks  |  |  |  |  |

**12. Food Note:**

.....  
signature