



Daffodil
International
University

Diet Chart for Diabetic patients of BIRDEM General Hospital

BY

SADIA JANNAT TONU

ID: 191-34-859

Submitted to the Department of Nutrition and Food Engineering in the partial fulfillment
of B.Sc. in Nutrition and Food Engineering

Supervised By

Md. Nawal Sarwer

Lecturer

Department of NFE

FACULTY OF ALLIED HEALTH SCIENCE (FAHS)

DAFFODIL INTERNATIONAL UNIVERSITY

JULY 2023

APPROVAL

This Project titled “**Diet Chart for Diabetic patients of BIRDEM General Hospital**”, submitted by Sadia Jannat Tonu 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. The presentation has been held on 00/00/2023 .

EXAMINING COMMITTEE

Dr. Nizam Uddin
Associate Professor & Head
Department of NFE
Faculty of Allied Health Science
Daffodil International University

DECLARATION

We hereby declare that, this project has been done by me under the supervision of **Md. Nawal Sarwer, Lecturer, Department of NFE**, Daffodil International University. I also declare that neither this project nor any part of this project has been submitted elsewhere for award of any degree or diploma.

Supervised by:



Md. Nawal Sarwer
Lecturer
Department of NFE
Daffodil International University

Submitted by:



Sadia Jannat Tonu
ID: 191-34-859
Department of NFE
Daffodil International University

ACKNOWLEDGEMENT

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

I am really grateful and wish our profound our indebtedness to **Md. Nawal Sarwer, Lecturer**, Department of NFE, Daffodil International University. Deep Knowledge & keen interest of our supervisor in the field of “*Clinical Nutrition*” to carry out this project. His endless patience ,scholarly guidance ,continual encouragement , constant and energetic supervision, constructive criticism , valuable advice ,reading many inferior draft and correcting them at all stage have made it possible to complete this project.

I would like to express our heartiest gratitude to Md. Nawal Sarwar and Head, Department of NFE, for his kind help to finish our project and also to other faculty member and the staff of NFE department of Daffodil International University.

I would like to thank our entire course mate in Daffodil International University, who took part in this discuss while completing the course work.

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

ABSTRACT

The diabetic association of Bangladesh operates the 600-bed multidisciplinary hospital complex known as the Bangladesh institute of research & rehabilitation in diabetes, endocrine, and metabolic disorders in Shahbagh, Dhaka, Bangladesh. When diabetes was first recognized as a disease of the wealthy in 1956, few people predicted that it would soon become a worldwide epidemic, especially in underdeveloped and developing nations. The Diabetes Association of Pakistan, which later changed its name to Diabetic Association of Bangladesh, was founded under the leadership of Professor Dr. Mohammad Ibrahim (1911-1989). In the outpatient department (OPD) at BIRDEM, 3,000 patients are admitted each day. No other hospital in Bangladesh handles as many diabetic patients as this one does. Diabetes is a chronic illness that is normally managed using a variety of treatments available at BIRDEM general hospital. It is important to offer a balanced diet and portion control to help reduce blood sugar levels. To assist patients in making healthy decisions providing nutrition instruction and counseling are needed. Providing tools for tracking blood sugar levels, including insulin pumps, continuous glucose monitoring systems, and glucose meters are very essential. Foot examinations and treatments avoid problems in diabetes. Patient needs therapy for the treatment of kidney impairment, nerve damage, visual issues, and heart disease. A diabetic diet aims to maintain blood sugar levels by restricting the quantity and types of proteins, carbs, and fats eaten. An appropriate diet tries to assist patients in achieving and maintaining balanced blood sugar levels, which can lower the risk of diabetic consequences such heart disease, kidney damage, and nerve damage.

TABLE OF CONTENTS

CONTENTS	PAGE
Approval	i
Declaration	ii
Acknowledgements	iii
Abstract	iv
CHAPTER 1:	1-4
1.1 Introduction	1-2
1.2 Origin of the report	3
1.3 Goal of the report	3
1.4 Objective	4
CHAPTER 2:	5-8
2.1 Overview of BIRDEM	5-7
2.2 Vision of BIRDEM	8
2.3 Mission of BIRDEM	8
CHAPTER 3:	9-10
3.1 Case study overview	9
3.2 Macronutrient Distribution	10
CHAPTER 4:	11-20
4.1 Type 1 Diabetes & Case Study with type1 Diabetes	11-14
4.2 Diabetes with Hypertension & Case study of Diabetes with Hypertension	15-16
4.3 CKD in diabetes & A case study of CKD patient with diabetes	17-18
4.4 Constipation in Diabetes & A case study of diabetic patient with constipation	19-20
CHAPTER 5: Perspective of mine about the diet chart	21
CHAPTER 6: Conclusion	22

CHAPTER 1

1.1 Introduction

The purpose of nutritional support for diabetic patients is to aid them in managing their weight, achieving and maintaining good blood sugar levels, and lowering their risk of developing complications from diabetes. Personalized meal plans that are made to satisfy the person's nutritional needs and control their blood sugar levels are often part of nutritional support. A diabetic diet plan aims to restrict the consumption of carbs, proteins, and lipids in order to control blood sugar levels.

The primary goal of nutritional support for diabetic patients is to reduce the increased caloric needs brought on by their hypermetabolic state while preventing overeating. Several techniques have been employed to estimate patients' caloric needs.

Enteral nutrition, another name for tube feeding, is an option for diabetes patients who are unable to eat or who have trouble swallowing. A tube that is put via the nose or mouth and into the stomach or intestines is used to provide a liquid formula. Diabetes sufferers must pick diets that are nutrient-rich, such as non-starchy vegetables, fruits, whole grains, lean proteins, and healthy fats.

It's necessary to consume meals that are high in fiber, vitamins, and minerals while also being low in calories and carbohydrates.

Fruits and vegetables contain natural sugars that might alter blood sugar levels, therefore diabetic people should eat them in moderation.

Whole grain pasta, whole wheat bread, and brown rice are rich in fiber and minerals including iron and B vitamins.

Skinless chicken or turkey, fish, eggs, and beans are types of lean protein sources that can contribute important amino acids and other nutrient.

In order to create a proper meal plan that takes into consideration their different nutritional requirements, preferences, and blood sugar management objectives, diabetes patients should consult a qualified Nutritionist.

A nutritionist can create a custom meal plan that considers the person's dietary needs, food preferences, and cultural background. By offering individualized dietary advice, education, and support to diabetic patients, nutritionists play an essential role in the management of diabetes and can assist with achieving their health goals.

1.2 Origin of the report:

The purpose of internship programs is to provide interns a chance to think back on their experiences, assess their strengths and weaknesses, and make plans for their future professional aspirations.

The department of nutrition and food engineering (NFE) requires internships, which are an essential element of preparing students for their future professions. In order to evaluate the value of the internship and the intern's potential for future success, internship reports continue to be a crucial component of the internship experience.

1.3 Goal of the report:

The purpose of this internship report is to show that I am capable of studying evidence-based nutrition care in a hospital context and that I am able to interact well with patients. For upcoming job applications in clinical nutrition settings, this study can be a useful resource.

1.4 Objective

Gaining a strong knowledge of the dietary recommendations for people who have diabetes.

- Putting into practice the creation of customized meal plans and nutrition advice based on specific tastes and needs.
- Enhancing communication abilities to advise and educate patients on dietary and lifestyle modifications to enhance their treatment of diabetes.
- My internship's goal is to give me the hands-on training and skill-building I need to be able to advise people with diabetes on diet effectively.
- Meeting the requirements for a BSc in Nutrition & Food Engineering, as well.

CHAPTER 2

2.1 Overview of BIRDEM General Hospital ^[3]



Figure 1: Buildings of BIRDEM



Figure 2: Entry point of BIRDEM



Figure 3: Reception of BIRDEM



Figure 4: Waiting zone



Figure 5: Ward



Figure 6: Food tray



Figure 7: Ward

2.2 Vision of BIRDEM

No diabetic should pass away in Bangladesh untreated, unemployed, or hungry.

Affordable health care services must be made available to everyone. ^[3]

2.3 MISSION OF BIRDEM

Offer comprehensive medical care, including rehabilitation, to all diabetics, regardless of gender, economic situation, or social standing, through various Diabetic Associations of Bangladesh institutions.

Extend these services to create self-sustaining centers of excellence that can deliver inexpensive BADAS healthcare to all Bangladeshis.

Develop highly ethical, specialized human resources (such as research scientists, doctors, nurses, technicians, and other associated professionals).

Establish leadership in the healthcare industry by using a committed and open management approach.

Create industries that produce high-quality pharmaceuticals and healthcare items. ^[3,4]

CHAPTER 3

3.1 Case study overview

I have gained knowledge about creating diet charts for diabetic patients with difficulties during this internship term. For instance-

- Type 1 diabetes
- Diabetes with Hypertension
- Diabetes-related CKD
- Constipation in Diabetes

Lack of resources is a problem when trying to balance nutrition in diabetic patients.

- A change in lifestyle.
- A lack of familial assistance.
- Mental well-being.
- Care standards and clinic resources.
- Insensitive service.
- Obstacles to patient engagement.

3.2 Macronutrient Distribution

The Appropriate Macronutrient Distribution Ranges (AMDR), established by the Institute of Medicine (IOM), are recommendations for the proportion of a person's daily calorie intake that should come from each of the three macronutrients: proteins, fats, and carbs. The AMDR advice is as follows:

1. Carbohydrates:

Carbohydrates should make up 50-55% of daily calorie intake.^[2]

Since carbohydrates are the body's main fuel source, this range gives the body enough energy for daily activity.

2. Fat:

The recommended daily fat intake is between 15-20 percent.^[2]

This range helps the body absorb fat-soluble vitamins and gives it vital fatty acids.

3. Protein:

The recommended daily protein intake is between 30 percent.^[2]

This range gives the body the building blocks it needs for various biological processes, including muscle growth and repair.^[2]

CHAPTER 4

4.1 Type 1 Diabetes

The chronic autoimmune illness known as type 1 diabetes, sometimes referred to as insulin-dependent diabetes, is defined by the body's inability to manufacture insulin. The pancreas secretes insulin, a hormone that aids in controlling blood sugar (glucose) levels. In those with type 1 diabetes, the immune system incorrectly targets and kills the beta cells, which are the pancreas's insulin-producing cells. Because of this, the body cannot create enough insulin to regulate blood sugar levels.^[2]

These reports are very important to check for a diabetic patient:

- Blood Sugar,
- Lipid Profile
- HbA1C
- Height and weight,
- blood pressure,
- kidney disease,
- creatinine test,
- electrolytes (Na⁺, K⁺, etc.),
- kidney disease.

For the management of diabetes, including type 1 diabetes, a healthy and balanced diet is crucial. Here are some recommendations for an eating routine that can assist in keeping blood sugar levels stable:

1. Regular Intake of Carbohydrates: Carbohydrates have the most effect on blood sugar levels. It's crucial to consume a constant amount of carbohydrates with each meal and snack, and to spread out our daily carbohydrate intake equally. Effective insulin dosage management is made possible by this.^[2]

2. Balanced Meals: Each meal should have a mixture of carbohydrates, lean proteins, and healthy fats. This facilitates a slower pace of glucose breakdown and absorption.

3. Portion Control: Watching portions to prevent overeating. This can support weight control and the maintenance of steady blood sugar levels.^[2,6]

4. Good Fats: Include good fats diet, such as those found in avocados, nuts, seeds, and olive oil. These fats are a valuable source of nutrition and can increase insulin sensitivity.

5. Establish Regular Meal Timing: Shouldn't skip meals and establish regular meal timings. Meal schedule consistency contributes to stable blood sugar levels.

6. Maintain Hydration: Drink lots of water all day long. Choose water, herbal tea, or sugar-free drinks in place of sugary beverages.



Picture: Talking with Patient

Case Study with type1 Diabetes

Patient Name: Mahmuda Akter

Age: 36 yrs.

Weight: 63 kg

Height: 163cm

Appetite: Fair

Physical activity: Light activity

Formula of BMI=Weight(kg) / [Height(m)]²

=23.71kg/m²(Normal)

Requirement Calories per day= 1800 kcal

Distribution requirement of calorie macronutrients:

CHO: 225 gm

CHON: 90 gm

Fat: 60 gm

Menu Planning

Breakfast:

Bread 3P (90gm)

Egg 1P

Vegetables 1 Cup

Snacks (Mid-morning):

Puffed rice 30gm

Milk 1 Cup

Lunch:

Rice 3 Cup (360gm)

Fish 1P (60gm)

Lentils 1 Cup (20gm)

Vegetables 1 Cup

Snacks Afternoon:

Puffed rice 30gm

Milk 1 Cup

Dinner:

Bread 3P (90gm)

Chicken 1P (60gm)

Lentils 1 Cup (20gm)

Vegetables 1 Cup

Bed time:

Bun 1P

Description:

- Water 2-2.5 liter per days.
- Cooking oil 4Tsp per day.
- Frequently take meal 5-6 times in a day.
- Restricted food: Sugar, Chocolate, Cake, Pastry, Ice-cream, sweet etc.

4.2 Diabetes with Hypertension

The coexistence of diabetes and hypertension (high blood pressure) in a person is referred to as diabetes with hypertension. It indicates that a person has both hypertension, which is marked by persistently high blood pressure, and diabetes, which is characterized by high blood sugar levels.

In comparison to any illness alone, having both conditions together can increase the health risks and problems. Obesity, lack of exercise, and a poor diet are all risk factors for both diabetes and hypertension that are frequently related to each other.^[1]

The risk of cardiovascular problems, including heart disease and stroke, is greatly raised when diabetes and hypertension coexist.

To manage and prevent problems, people with diabetes and hypertension must periodically check their blood pressure and blood sugar levels and undergo routine medical exams.^[1,2]

Case study of Diabetes with Hypertension

Patient Name: Hosne Ara Begum

Age: 55 yrs.

Weight: 67 kg

Height: 151cm

Appetite: Good

Physical activity: Sedentary

Formula of BMI=Weight(kg) / [Height(m)]²
=29.4kg/m²(Over weight)

Requirement Calories per day= 1200 kcal

Distribution requirement of calorie macronutrients:

CHO: 150 gm

CHON: 60 gm

Fat: 40 gm

Menu Planning

Breakfast:

Bread 2P (60gm)

Egg 1P

Vegetables 1 Cup

Snacks (Mid-morning):

Puffed rice (15 gm)

Milk 1 Cup

Lunch:

Rice 2 Cup (180gm)

Fish 1P (30gm)

Lentils 1 Cup (15gm)

Vegetables 1 Cup

Snacks Afternoon:

Puffed rice 15 gm

Milk 1 Cup

Dinner:

Bread 2P (60gm)

Chicken 1P (30gm)

Lentils 1 Cup (15gm)

Vegetables 1 Cup

Bed time:

Bun 1P

Description:

- Water 2-2.5 liter per days.
- Cooking oil 3Tsp per day.
- Frequently take meal 5-6 times in a day.
- Restricted food:For diabetes : Sugar, Chocolate, Cake, Pastry, Ice-cream, sweet etc
For Hypertension: Cheese, extra salt, pickle, saya sauce etc.

4.3 CKD in diabetes

Chronic kidney disease is a chronic disorder that causes a progressive loss of renal function. One of the main causes of CKD is diabetes. Chronically high blood sugar levels linked to diabetes can harm the kidneys' tiny blood capillaries and reduce their capacity to remove extra fluid and waste from the body. If not treated, this could eventually result in renal failure.

To prevent the advancement of kidney damage in diabetics with CKD, regular kidney function testing and adequate diabetes management are crucial.

The progression of renal disease can be considerably slowed down and long-term results can be improved with early detection, appropriate management, and lifestyle changes. ^[1,7]

A case study of CKD patient with diabetes

Patient Name: Md Hamidur Rahman

Age: 72 yrs.

Weight: 63 kg

Height: 158cm

Appetite: Fair

Physical activity: Sedentary

Formula of BMI=Weight(kg) / [Height(m)]²
=25.2kg/m²(Over weight)

Requirement Calories per day= 1600 kcal

Distribution requirement of calorie macronutrients:

CHO: 200 gm

CHON: 80gm

Fat: 54 gm

Menu Planning

Breakfast:

Bread 3P (90gm)

Egg 1P

Vegetables 1 Cup

Snacks (Mid-morning):

Sago (60gm)

Lunch:

Rice 3 Cup (360gm)

Fish 1P (60gm)

Vegetables 1 Cup

Snacks Afternoon:

Sago (60gm)

Dinner:

Bread 3P (90gm)

Chicken 1P (60gm)

Vegetables 1 Cup

Bed time:

Bun 1P

Description:

- Cooking oil 4Tsp per day.
- Frequently take meal 5-6 times in a day.
- Restricted food:
For diabetes: Sugar, Chocolate, Cake, Pastry, Ice-cream, sweet etc.
For CKD: Lentils, pulp, gram flour, chotpoti, Haleem, Seeds etc.

4.4 Constipation in Diabetes

Some diabetics may develop constipation for a variety of reasons; it is not a direct consequence of diabetes.

Diabetes can cause neuropathy, which can harm the nerves that regulate bowel movements. Diabetic neuropathy is a disorder that can impair the digestive system's regular operation and cause constipation.

Slower bowel motions and constipation might result from fluctuating blood sugar levels or persistently high blood sugar levels that influence the motility of the intestines.

Some diabetes treatments, including some insulin types and oral drugs, can cause constipation. Diabetics may not drink enough water.

Constipation may be caused by a low-fiber diet or insufficient fiber consumption. Additionally, some diabetics may adhere to rigid diets that exclude foods high in fiber.^[1,6]

A case study of diabetic patient with constipation

Patient Name: Md Sohel

Age: 65 yrs.

Weight: 63 kg

Height: 165cm

Appetite: Fair

Physical activity: light activity

Formula of BMI=Weight(kg) / [Height(m)]²
=23.1kg/m²(Normal)

Requirement Calories per day= 1800 kcal

Distribution requirement of calorie macronutrients:

CHO: 225 gm

CHON: 90 gm

Fat: 60 gm

Menu Planning

Breakfast:

Bread 3P (90gm)

Egg 1P

Vegetables 1 Cup

Snacks (Mid-morning):

Sago (30gm)

Milk (125 ml)

Lunch:

Rice 3 Cup (360gm)

Fish 1P (60gm)

Lentils (20gm)

Vegetables 1 Cup

Snacks Afternoon:

Puffed rice (30gm)

Milk (125ml)

Dinner:

Bread 3P (90gm)

Chicken 1P (60gm)

Lentils (20gm)

Vegetables 1 Cup

Bed time:

Bun 1P

Description:

- Cooking oil 5Tsp per day.
- Water 2-2.5 L/Day.
- Frequently take meal 5-6 times in a day.
- Restricted food: soft drinks, Sugar, Chocolate, Cake, Pastry, Ice-cream, sweet etc

CHAPTER 5

5. Perspective of mine about the diet chart:

They change the caloric ratio and food size. If there are some variations in the food chart according to patient's choice with restricted diet, they wouldn't have to eat same food in every meal. Eating the same thing every day might get boring and limit happiness with food. The enjoyment of eating is enhanced by including a variety of tastes, textures, and colors in diet.

CHAPTER 6

6. Conclusion

I obtained a thorough awareness of diabetes, its effects on people's lives, and the significance of eating habits in successfully treating the condition. I gained the ability to evaluate and analyze patients' food habits, allowing me to spot patterns and areas for development. I learned about nutritional recommendations particular to people with diabetes and how to use them to create individualized meal plans for individuals. I was able to develop my counseling and communication skills through my contacts with nurses and patients, which helped me make clear nutritional suggestions and offer support. I learned about the various cultural and socioeconomic elements that affect patients' eating patterns, emphasizing the importance of providing individualized counsel. I became skilled in gathering and analyzing information about food habits to assist evidence-based decision-making.

I had a chance to learn during my internship term. I had to talk to nurses and patients. My ability to communicate was improved. I have gained a lot of experience and improved my skills by visiting people who are afflicted with various diseases. I am now knowledgeable about diabetic patients' diets.

I want to thank my supervisor Nawal Sarwar for organizing everything. Overall, my internship experience has improved my skills and prepared me for my future job.

References:

- [1] Diabetes Code by Dr. Jason Fung (P 39,40,48,53,80)
- [2] Nutrition and Diet Therapy by Peggy Stanfield & Y.H Hui :5th Edition (P 277,282,285,308)
- [3] <https://www.birdembd.org/>
- [4] <https://en.wikipedia.org/wiki/BIRDEM>
- [5] <https://en.banglapedia.org/index.php/BIRDEM>
- [6] <https://www.nhsinform.scot/illnesses-and-conditions/diabetes/type-1-diabetes>
- [7] <https://www.niddk.nih.gov/health-information/diabetes/overview/diet-eating-physical-activity>