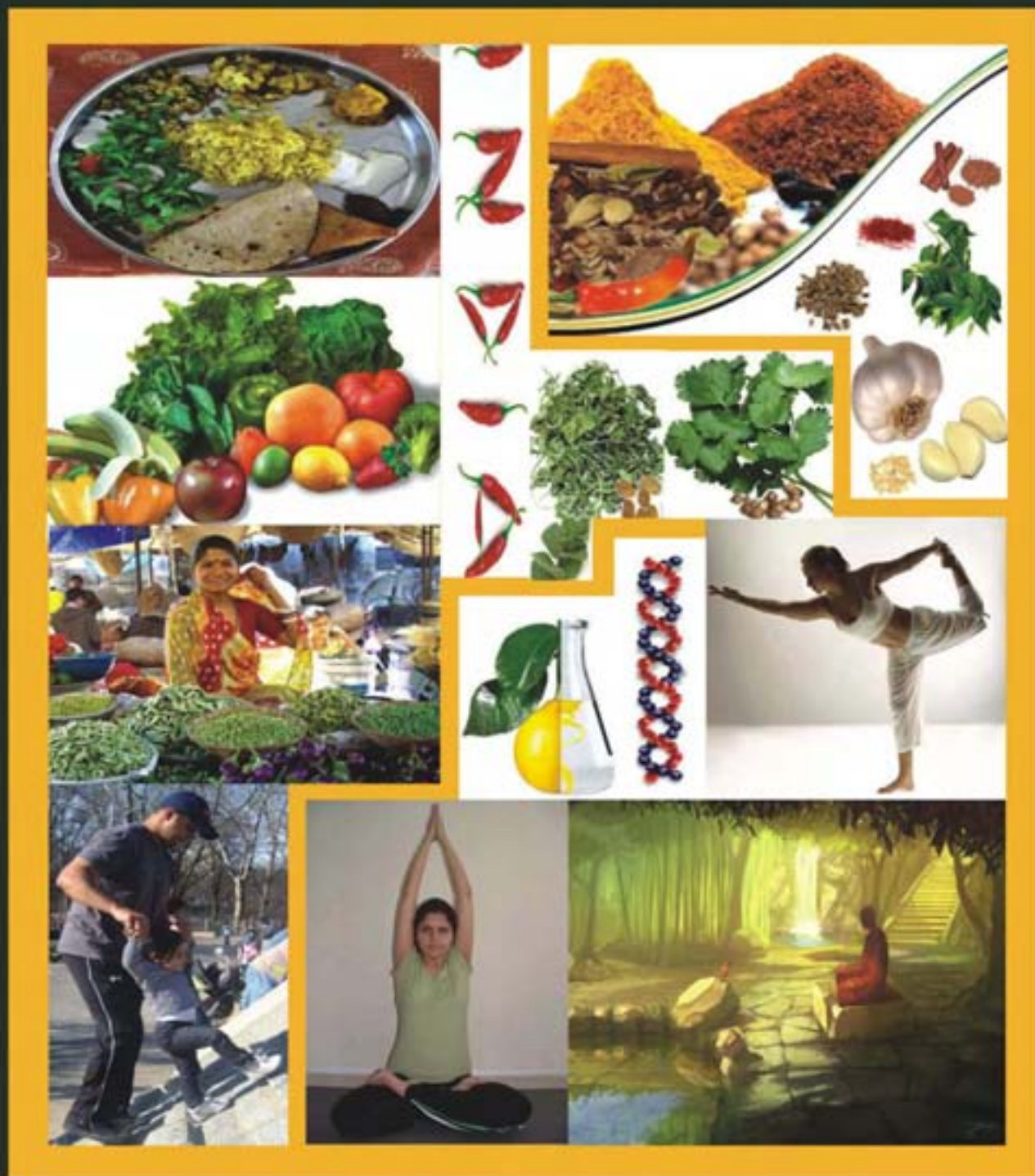


# INDIAN FOODS: AAPI'S GUIDE TO NUTRITION, HEALTH, AND DIABETES



2nd Edition

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# Indian Foods: AAPI's Guide To Nutrition, Health and Diabetes

## SECOND EDITION

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Edited by

**RANJITA MISRA**

Professor & Research Director

Center for the Study of Health Disparities (CSHD)

Member, Intercollegiate Faculty of Nutrition

Texas A&M University

### Contributors

Nirmala Abraham

Padmini Balagopal

Rita (Shah) Batheja

Nimesh Bhargava

Sharmila Chatterjee

Madhu Gadia

Wahida Karmally

Keya Deshpande Karwankar

Karmeen Kulkarni

Theja Mahalingaiah

Suraj Mathema

Ranjita Misra

Chhaya Patel

Thakor G Patel

Sudha Raj

Nirmala Ramasubramanian

Janaki Sengupta

Geeta Sikand



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TG Patel and Parul Todai**

Reviewers  
**Padmini Balagopal, Rita Batheja Wahida Karmally, Karmeen Kulkarni, Ranjita Misra,  
TG Patel, Sudha Raj and Nirmala Ramasubramanian**

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600 Enterprise Drive, Suite 108  
Oak Brook, IL 60523

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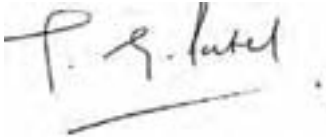
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# Preface

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Indian Foods: AAPI's Guide to Nutrition, Health & Diabetes is a labor of love by a group of dedicated dietitians. This booklet has information which will guide Asian Indians and particularly Indian Americans of Indian origin better manage and prevent diabetes, hypertension, obesity and hyperlipidemia. In addition, this book can be used by physicians and other health care professionals who see patients in their clinic using the Asian Indian cuisine. I believe this book is a must have for all Indian Americans. It is available on the American Association of Physicians of Indian Origin (AAPI) website at [www.aapiusa.org/resources](http://www.aapiusa.org/resources). This revision is presented to the Indian American community and physicians as a community service on behalf of AAPI. The reader will find that this edition has a few added chapters and appendices. The two new chapters include "Do Indian Spices and Condiments Have a Role to Play in Preventive Health and Therapeutics" & "Renal Diet." It is our small effort to help our community take charge to prevent diabetes, hyperlipidemia, and obesity and manage them if present.

With best wishes,

A handwritten signature in black ink, appearing to read "T.G. Patel", with a horizontal line underneath.

**T.G.Patel, MD, MACP**

Advisor, Public Health Committee, AAPI



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# Acknowledgement

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The revised edition of the book was done in a timely manner due to Dr. Ranjita Misra's leadership and coordinating efforts. We would also like to thank Padmini Balagopal as the coordinating editor for the first edition and Rita (Shah) Batheja as co-chair for her invaluable help in bringing together an expert group of contributors.

I want to personally thank the authors Nirmala Abraham, Padmini Balagopal, Rita Batheja, Sharmila Chatterjee, Keya Deshpande, Madhu Gadia, Wahida Karmally, Karmeen Kulkarni, Theja Mahalingaiah, Suraj Mathema, Ranjita Misra, Chhaya Patel, Sudha Raj, Nirmala Ramasubramanian, Janaki Sengupta and Geeta Sikand. These authors took time out of their busy family life, academics and work to revise this edition of the book. To date, this book is still one of the best resources on preventive health and disease management on the Asian Indian cuisine presented in a simple and user friendly format. This book can be downloaded in its entirety from the website [www.aapiusa.org/resources/nutrition.aspx](http://www.aapiusa.org/resources/nutrition.aspx) for use.

The reviewers Padmini Balagopal, Rita Batheja, Wahida Karmally, Karmeen Kulkarni, Ranjita Misra, T.G.Patel, Sudha Raj and Nirmala Ramasubramanian have done a tremendous job in getting the reviews back in time and in ensuring the accuracy of the material.

The Pocket Reference Card for diabetes was created by the Diabetes Committee of the Indo-US Health Summit, a new additions to this book. I want to thank Drs. Ritesh Gupta, Shashank Joshi, Anoop Misra, T.G.Patel and Banshi Saboo, along with the advisors who helped revise this Pocket Reference Card. This committee consists of Drs. Anuj Bhargava, Arvind Gupta, Neha Gupta, Shilpa Joshi, Sailesh Lodha, Mohan Mallam, Sundar Mudaliar, Rakesh Parikh, V. Ranga, Jayesh B. Shah, Ronak Shah, Priya Sivaprakasan, and Vijay Viswanathan. The Gestational Diabetes meal plan was created by Sharmila Chatterjee, another new addition to this book. I want to thank Padmini Balagopal for creating "What Can I Eat to Manage my Diabetes" and Wahida Karmally and Karmeen Karmally to review the document & the translators of the regional languages (Bengali, Gujarati, Hindi, Kannada, Malayalam, Marathi, Odia, Punjabi, Sindhi, Tamil and Telugu) Rajasri Chatterjee, Kaushik Chatterjee, Sharmila Chatterjee, Alokraj Banerjee, Balwant Suthar, Rita Batheja, Bharat Shah, Varun Japee, Vanita Manchanda, Uday Meghani, Varsha, Roshan Khaki, Kavitha Simha, Sheela Krishnaswamy, Shaji Tewani, Alex Johnson, Vaishali Mohile, Deepa Inamdar, Anita Mishra, GB Patnaik, Indu Jaiswal, Murali Sadani, Purshotam Sharangdhar, Sushila Sarangdhar, Suguna Lakshmi Narayanan, Anuradha Sivasundar, A Narasimha Reddy, Latha Sashi, N Lakshmi, and P Janaki Srinath.

Finally, I want to thank all the Indian Americans in the U.S. and Indians in India for helping us to assess data on our community by participating in different research projects. This book is a tribute to all Indian Americans and Indians all over.



**T.G.Patel, MD, MACP**





## FORWARD BY AJEET R. SINGHVI, PRESIDENT AAPI



I am pleased to see the publication of the second edition of Indian foods: AAPI's Guide to Nutrition, Health and Diabetes. The first edition was hugely successful and this edition was overdue and is being published at the right time.

Although there are over two thousand books on diabetes listed in the catalog of the Library of Congress (2,218 at the last count), however, there is a paucity of literature that deals with the largest population at risk: The Indian Population. The ancient Ayurvedic treatises by Sushruta and Charaka recommended diet as treatment for diabetes more than two thousand years ago in India. This is as relevant today, if not more so, as it was then. Further, it is not only of great value to Indians here in States but also to the general population India - especially given the expansion of quick service restaurants and the concomitant adoption of a diet of highly processed, high calorie, high sugar, high fat, but low nutrient value foods.

It will be of special benefit to all to realize that the concept of diet as treatment is centuries old. Through this concept, people will discover new and tasty foods that help manage or even reverse their diabetes and other related conditions.

This publication is truly unique. The contributors include M.D.s, Ph.Ds, and Registered Dietitians. There is a diet plan to suit every palate and for different ethnic groups and regions. The authors have taken into account the changing environment, customs, and preferences and have made modifications to suit all the segments of the population and all taste buds in the contemporary society.

This book makes us all proud. Health is wealth, and this book takes us a step forward in that direction. I am sure it will be very useful to the reader. I personally congratulate Dr TG Patel, Dr. Ranjita Misra and their entire team for this superb effort.

Sincerely,

**Ajeet R. Singhvi, MD, FACC**  
President, AAPI  
president@aapiusa.org



# Chapter 1

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## Introduction

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Sudha Raj, PhD, RD

Since 1965 more than 2 million Asian Indians have immigrated to the United States from the Asian sub-continent of India. Recent census report that their numbers have increased from 1.6 million in 2000 to 2.7 million in 2007. The community continues to be ranked the third largest Asian American group in the United States after Chinese and Filipinos. Fifty percent of Asian Indians reside in the South and West followed by 35% in the north-east and the remainder in the Mid-West. Large Asian Indian communities are seen in the states of California, Illinois, New Jersey, New York and Texas. The community consists of academic, medical and technical professionals, individuals who own and/or work in commercial establishments and their dependents (spouses, children, siblings and elderly parents who visit from India for extended periods of time).

The Asian Indian community is diverse with regard to the region of origin in India and the religions they practice. India can be divided into four major regions-North, South, East and West. Each region has its own distinctive language, dialects, customs and food practices. Hinduism is the predominant religion practiced by Asian Indians followed by Islam, Buddhism, Jainism, Sikhism, Zoroastrianism, Christianity and Judaism. The followers of these different religions observe different dietary laws and codes for fasting, and feasting thereby influencing their eating patterns. Throughout history, the culture and cuisines of India have been influenced by other civilizations such as the Moghuls, the British and now the Americans. The neighboring nations of Pakistan, Nepal, Bhutan, Bangladesh and Sri Lanka

on all four frontiers share many common features with regard to dietary habits and food practices despite their unique cuisines.

### **Health problems and nutritional status of Asian Indians in the US**

Some of the important health problems faced by Asian Indian immigrants include chronic degenerative diseases such as diabetes, hypertension, cardio-vascular disease and complications arising from any of these conditions. In fact, Asian Indian immigrants have a significantly higher risk of CVD (cardiovascular disease) with heart disease rates estimated to be one and one half to four times greater than Whites. In addition to the genetic susceptibility in developing Type 2 diabetes and cardiovascular disease, risk factors such as abnormal lipid levels, increased abdominal fat, diets high in fat, saturated and trans-fats, simple carbohydrates and sedentary lifestyles contribute to the development of chronic diseases.

### **What can you do?**

Your nourishment does not depend on the selection of any one food. Instead it depends on the consistent and continuous selection of many different foods on a day to day basis. This book gives you suggestions on how to plan your diet with Asian Indian cuisine with foods and tips that will help to enhance your health.

### **Purpose and organization of this booklet**

This book makes an attempt to present some tools for patients and the general public to help with

lifestyle changes in the prevention and treatment of chronic diseases. Highlights of this book include:

- A brief description of two chronic degenerative diseases- Diabetes and Cardiovascular disease.
- A description of the different regional cuisines of India. Within each region we provide background information to illuminate the cultural context from which the ethnic foods and food habits have evolved, popular dishes, meal patterns highlighting typical and modified meal patterns for clients with chronic diseases, tips for changes and suggestions for weekend and party planning and tips on how to modify a high-fat recipe into a more heart-healthy one. Every chapter talks about weekend eating as the two days of feasting and partying can undo many of the benefits of eating healthy throughout the week.
- A description of common spices used in the various cuisines and their health benefits.
- A section on food exchanges that gives a list of some of the common foods and selected food items mentioned in the book as well as some of the ingredients in this cuisine with its English equivalent.
- Nutrition advice, tips and guidelines by qualified professionals and reviewers in the field of nutrition (you will find a brief write-up about the writer at the end of each chapter).

## **A Primer on Chronic Diseases in Asian Indians**

### **Diabetes**

Diabetes is a chronic disorder characterized by high blood glucose and either insufficient or ineffective insulin, depending on the type of diabetes.

Type 1 diabetes also known as insulin dependent diabetes or juvenile onset diabetes typically strikes around the ages of 8 to 12 years but can occur at any age. The disease has a strong genetic link. The pancreas cannot synthesize insulin thereby altering

the body's metabolism. Insulin is required to assist the cells in taking up the needed fuels from the blood.

Type 2 diabetes is characterized by high blood glucose and insulin resistance. This disease usually begins after the second decade of life. However the widespread changes in lifestyle and dietary practices has resulted in the appearance of this disease at a much younger age. In the initial stages the pancreas produces insulin. The person may actually have higher than average insulin levels but the cells are not very responsive either because they have fewer number or malfunctioning receptors that are needed for the insulin to exert its action. Consequently the blood glucose levels increase thereby stimulating the pancreas to produce insulin. This exhausts the cells and reduces their ability to function. Generalized weight gain particularly in the abdominal region aggravates the condition because the higher body fat necessitates higher insulin production. Age, genetics, lifestyle and dietary factors promote the development of the disease.

Symptoms of Diabetes *include frequent urination, excessive thirst, extreme hunger, unusual weight loss, increased fatigue, irritability and blurred vision.*

### *Criteria for diagnosis*

- Symptoms of diabetes together with casual (any time of day) plasma glucose concentrations of > 200 mg/dl.
- Fasting plasma glucose (At least 8 hours following no caloric intake) > 126 /dl.
- Two hour plasma glucose > 200 mg/dl during an oral glucose tolerance test.

### *Criteria for Impaired Glucose levels*

- Fasting plasma glucose levels of > 110mg/dl - 126 mg/dl or post-prandial glucose levels (2 hrs after meals) of > than 140 mg/dl during an oral glucose tolerance test can be considered to be in the Impaired blood glucose range.

### *Body Mass Index and Waist circumference*

- A Body Mass Index of  $\geq 23$  and Waist circumference of  $>35.4$ " for men and  $31.5$ " for women can put a person at risk for developing diabetes if there is a genetic predisposition.

*Blood Pressure* -  $<120/80$

*HbA1c* -  $<6.5$

### *Complications of diabetes*

The accumulation of glucose in the blood leads to acute and chronic complications. Therefore early, aggressive treatment to control blood glucose significantly reduces the risk of long term diabetes related complications. Diabetes related complications include diseases of the:

- large blood vessels such as atherosclerosis
- small blood vessels resulting in loss of kidney function as seen in kidney diseases, retinal degeneration and blindness.
- nerves resulting in loss of sensation, increased infections stemming from unnoticed injuries, and gastrointestinal problems.

### *Recommendations for Type 1*

Nutrition is an important part of the treatment regimen. Nutritional therapy focuses on maintaining optimal nutrition for growth and development in the child, educating clients about portion sizes, modifying recipes, controlling blood glucose, preventing and treating related complications. Focus is on meal intake patterns, consistency in carbohydrate intake to minimize glucose fluctuations.

### *Recommendations for Type 2*

The American Diabetes Association recommends that the distribution of calories between fats and carbohydrates should be individualized according to the individual's assessment and treatment plan.

- Calories should be prescribed to maintain a reasonable body weight ideal for the person's age, sex and lifecycle needs.

- Protein intake is recommended at 10-20% of caloric intake with a focus on plant based sources such as lentils and beans, cereal lentil combinations and the use of smaller portions of lean meats, poultry and fish.
- Total fat, saturated fat and cholesterol intakes must be tailored to meet individual requirements based on blood lipid profiles. Focus on healthy fats rather than saturated fats and emphasize avoidance of trans-fats.
- Diet should focus on the consumption of complex carbohydrates such as whole grains, fruits and vegetables. Consistent and evenly spaced carbohydrate intake throughout the day should be emphasized. In this respect carbohydrate counting and exchange lists provided in this book will help.
- Current guidelines advise moderation of salt intake that is  $< 1500$  mg. of sodium/day and no more than  $2300$  mg. of sodium/day.

### **Metabolic Syndrome**

Metabolic syndrome is a condition closely related to insulin resistance. Abdominal obesity and insulin resistance aggravate the disease along with hypertension and abnormal lipid levels.

*Diagnostic criteria* put out by the International Diabetes Federation include a waist circumference of  $> 90$  cms for men and  $80$  cms for women; a triglyceride level of  $>150$  mg/dl; a HDL-cholesterol level of  $< 40$  mg/dl for men and  $<50$  mg/dl for women; a blood pressure of  $> 130/85$  mm HG and a fasting plasma glucose of  $>100$  mg/dl or previously diagnosed type 2 Diabetes.

### **Cardiovascular disease**

More than 50% of cardiovascular disease occurrences arise from atherosclerosis. Atherosclerosis is a generic term used to describe the thickening of the arteries caused by the formation and deposition of an atherosclerotic plaque. The plaque is a fatty fibrous growth that

ultimately becomes calcified and contributes to the blocking of the arterial blood vessel. This results in poor or restrictive blood flow contributing to the rise in blood pressure or hypertension, myocardial infarction and stroke. Associated conditions include peripheral vascular disease resulting from the plaque formation in the leg and congestive heart failure that impairs normal cardiac function. Major risk factors for cardiovascular disease include age, gender, family history, abnormal lipid profiles such as low HDL and high LDL cholesterol, hypertension, diabetes, obesity and physical inactivity, cigarette smoking and an “atherogenic diet” high in saturated fat, trans fats, cholesterol, processed foods and low in fruits and vegetables. Recommendations for reducing your risk for cardiovascular disease include:

- Regular screening for abnormal lipid profiles such as a high LDL and low HDL levels as well as monitoring of blood pressure.
- seeking help from a trained nutrition professional (To find a registered dietitian (RD) in your area visit [www.eatright.org](http://www.eatright.org) Click on the “Find a Nutrition Professional” link toward top of the page). A dietitian can help you focus on therapeutic lifestyle changes such as increasing physical activity (regular exercise of more than thirty minutes every day), quitting smoking, alcohol consumption in moderation, stress reduction, dietary modifications such as moderating total and saturated fat intake, replacing saturated fats with desirable polyunsaturated fats; increasing the use of plant based diets with minimal amounts of animal products and paying attention to the sodium content of the diet.

**Sudha Raj PhD RD is a Senior Part-time Instructor in the Department of Nutrition Science & Dietetics in the College for Human Ecology at Syracuse University in Syracuse, New York. Contact information 315-443-2556 or [sraj@syr.edu](mailto:sraj@syr.edu)**

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## *Resource for Diabetes Education Material*

9. [www.yourdiabetesinfo.org](http://www.yourdiabetesinfo.org)
10. Two Reasons I Find Time to Prevent Diabetes: My Future and Theirs (in Gujarati)
11. <http://ndep.nih.gov/media/GujaratiTipsheet.pdf>
12. Two Reasons I Find Time to Prevent Diabetes: My Future and Theirs (Hindi)
13. <http://ndep.nih.gov/media/HindiTipsheet.pdf>
14. 4 Steps to Control Your Diabetes. For Life. (in Gujarati)
15. <http://ndep.nih.gov/publications/PublicationDetail.aspx?PubId=135>

*Introduction*

16. 4 Steps to Control Your Diabetes. For Life. (in Hindi)
17. <http://ndep.nih.gov/publications/PublicationDetail.aspx?PubId=141>
18. Take Care of Your Heart. Manage Your Diabetes (in Gujarati)
19. [http://ndep.nih.gov/media/TCH\\_AsAm\\_flyer\\_Guj.pdf](http://ndep.nih.gov/media/TCH_AsAm_flyer_Guj.pdf)
20. Take Care of Your Heart. Manage Your Diabetes (in Hindi)
21. [http://ndep.nih.gov/media/TCH\\_AsAm\\_flyer\\_Hin.pdf](http://ndep.nih.gov/media/TCH_AsAm_flyer_Hin.pdf)
22. If You Have Diabetes, Know Your Blood Sugar Numbers
23. [http://ndep.nih.gov/media/KnowNumbers\\_Eng.pdf](http://ndep.nih.gov/media/KnowNumbers_Eng.pdf)
24. Tips to Help You Stay Healthy
25. [http://ndep.nih.gov/media/TipsFeel\\_Eng.pdf](http://ndep.nih.gov/media/TipsFeel_Eng.pdf)
26. Tips for Kids: How to Lower Your Risk for Type 2 Diabetes
27. <http://ndep.nih.gov/media/kids-tips-lower-risk.pdf>
28. Diabetes Numbers at-a-Glance
29. [http://ndep.nih.gov/media/NumAtGlance\\_Eng.pdf](http://ndep.nih.gov/media/NumAtGlance_Eng.pdf)
30. The Power to Control Diabetes is in Your Hands Community Outreach Kit
31. <http://ndep.nih.gov/publications/OnlineVersion.aspx?NdepId=NDEP-44k>
32. Tips for Teens with Diabetes: Stay at a Healthy Weight
33. [http://ndep.nih.gov/media/Youth\\_Tips\\_Weight.pdf](http://ndep.nih.gov/media/Youth_Tips_Weight.pdf)
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36. [http://ndep.nih.gov/media/Youth\\_Tips\\_Eat.pdf](http://ndep.nih.gov/media/Youth_Tips_Eat.pdf)
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# Chapter 2

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## Epidemiology, Risks, and Complications of Type 2 Diabetes Mellitus

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Ranjita Misra, PhD, CHES, FMALRC & TG Patel, MD, MACP

### Prevalence and Risk Factors

The prevalence (all cases) and incidence (new cases) of type 2 diabetes (T2DM) and pre-diabetes [as defined by impaired fasting glucose (IFG) or impaired glucose tolerance (IGT)] are rapidly increasing both in developed and developing countries. The global burden of T2DM is more pronounced in India than any other country in the world. An estimated 57 million adult Indians will have diabetes by 2025, with the condition manifesting at an earlier age and lower body mass index. Although, the higher prevalence of T2DM in Asian Indians can be attributable to established causes such as growing levels of obesity and physical inactivity, various epidemiological studies have shown that these factors alone are not sufficient to explain this trend. One important factor contributing to increased prevalence of T2DM in Asian Indians is excessive insulin resistance. Insulin resistance is highly prevalent in Asian Indians despite low rates of obesity. While insulin resistance is very complex and not completely understood, this pathophysiologic abnormality results in decreased glucose transport in muscle, elevated hepatic glucose production, and increased breakdown of fat resulting in hyperglycemia. Indians seem to have a genetic predisposition towards insulin resistance with a low BMI and high central adiposity, sometimes also known as the 'Yudkin-Yajnik' paradox. This increased genetic susceptibility is further enhanced

by environmental triggers such as physical inactivity, excessive calorie intake, and obesity.

The main etiological (causal) risk factors for T2DM are older age, obesity, family history, physical inactivity and dietary factors such as a high proportion of energy consumed as saturated fat and low intake of fruit and vegetables. The rapid rise and epidemiological transition of T2DM in India, especially in urban areas, is associated with westernized lifestyle. Changes in the traditional lifestyles, dietary patterns and technological advancement have resulted in a pronounced physical inactivity and the affluence of society has led to consumption of diets rich in fat, sugar and calories. The observation of an association between low birth weight and risk of diabetes in later life has also led to the development of an alternative to the thrifty genotype hypothesis. It is hypothesized that the risk of T2DM is programmed by fetal nutrition and the pattern of early growth. The causal nature of these associations is strengthened by studies that show the incidence of diabetes is reduced by interventions aimed at reducing weight, increasing activity and improving diet.

With more than a billion people India is also home to significantly diverse groups of people in terms of ethnicity, caste and religion, socioeconomic status, educational level, and lifestyle and food habits. Studies on prevalence of T2DM show the rates in rural areas is significantly lower (3-6%) as compared

to urban areas (8-14%) in India. Pre-diabetes rates are slightly higher than T2DM prevalence but follow a similar pattern with urban prevalence significantly greater than the rural populations. Although prevalence of T2DM is lower than urban areas, rural Indians have higher glycosylated hemoglobin level (A1c) or poor control of the disease resulting in higher complications and mortality. Community-based diabetes prevention program in a rural Indian community also found rural youths, 10-18 years of age, had higher level of pre-diabetes. Lack of knowledge of T2DM and its associated complications, access to care & medical services, low

educational level and income are primary factors for elevated mortality of diabetic patients in rural India.

Studies on South Asians (includes Asian Indians, Pakistanis, Bangladeshis, Sri Lankans, Nepalese, Maldives, and Bhutan) immigrants in the United Kingdom, Canada, Australia, and Africa show a higher prevalence of T2DM and CVD as well. In the United States, the Diabetes among Indian Americans (DIA) national study showed prevalence rate of T2DM and pre-diabetes among immigrant Asian Indians as 17.4% and 33% respectively, higher than other racial/ethnic groups in the United States.

**Table 1: Prevalence of diabetes among rural Indians, urban Indians and Indian Americans**

US Site	Fasting Blood Glucose Levels			A1c Levels			
	Number of cases	Mean	SD	Mean	SD	< 8.0	≥ 8.0
Self-reported Diagnosed T2DM cases	145	137.03	42.73	6.84	1.30	84.4%	15.6%
Undiagnosed cases	36	156.03	35.58	7.28	1.35	80.6%	19.4%
<p>Total number of respondent = 1038; Prevalence of Diabetes = 17.44%; Prevalence of Pre-diabetes = 32.9%</p>							
Urban India	Number of cases	Mean	SD	Mean	SD	< 8.0	≥ 8.0
Self-reported Diagnosed T2DM cases	57	134.10	47.68	6.85	1.22	79.4%	20.6%
Undiagnosed cases	12	152.17	43.52	7.11	0.69	83.4%	16.6%
<p>Total number of respondent = 508; Prevalence of Diabetes = 13.6%; Prevalence of Pre-diabetes = 23.4%</p>							
Rural India	Number of cases	Mean	SD	Mean	SD	< 8.0	≥ 8.0
Self-reported Diagnosed T2DM cases	35	137.03	42.73	6.84	1.30	84.4%	15.6%
Undiagnosed cases	13	235.77	185.36	7.28	1.35	80.6%	19.4%
<p>Total number of respondents = 532; Prevalence of Diabetes = 9.02%; Prevalence of Pre-diabetes = 13.1%</p>							

In the same study, comparison of rural Indians, urban Indians and immigrant Asian Indians in the US showed rural Indians had the lowest rate followed by urban Indians and immigrants in the US (Table 1). Despite a perception that they have high socio-economic status and good access to health care, US Asian Indians have marked variations in educational attainment, income, and wealth, and a significant number lack education and job skills. Recent immigrant cohorts comprise both highly educated professionals as well as individuals who lack education and job skills. The latter are mostly family members of earlier immigrants.

### **T2DM Complications: A focus on Diabetes and Cardiovascular Disease**

T2DM is one of the leading causes of morbidity and mortality because of its role in the development of optic, renal, neuropathic, and cardiovascular disease. These complications, particularly cardiovascular disease (~50-75% of medical expenditures), are the major sources of expenses for patients with T2DM [for more information, please read the chapter on “Preventing Heart Disease in Asian Indians” and “Cardiovascular disease” in the introduction chapter]. In the United States, South Asian Indians have the highest ethnic-specific prevalence of CVD or coronary artery disease (CAD), with age-specific mortality two to three times higher than Caucasians. Results from the DIA study indicate traditional risk factors such as hypertension (21%), obesity (49.8%) and hypercholesterolemia (43.5%) may account for these high rates. Asian Indian immigrants have been found to have high rates of vascular disease in the United States and other countries. The CAD prevalence in US Asian Indians is 6 and 4 times higher than Chinese and other Asian Americans and associated with similarly higher prevalence of risk factors among this ethnic group. For example, the prevalence of central obesity, glucose intolerance, hypertension, high triglyceride levels, and low levels of high density lipoprotein cholesterol (HDL)– the five ‘axes of evil’ of metabolic syndrome– is the highest among the Asian Indians and continues to increase at a rapid

pace. Mortality from CAD is twice in Indian Americans than other racial/ethnic groups in the United States. The United Kingdom Prospective Diabetes Study, showed for each 1% increase in A1c, there was a 14% increase in incidence fatal or nonfatal myocardial infarction. Projections based on the Global Burden of Disease study have shown that by the year 2020, the overall burden of cardiovascular disease in India will surpass other regions of the world. There is no doubt that significant reduction in diabetes related morbidity and mortality is feasible through effective educational and lifestyle interventions to reduce smoking, promote regular exercise, monitor healthy dietary habits and reading food labels, and manage stress.

### **Epidemiology of Nutrition and Diabetes Mellitus: Etiology and Environmental Factors**

There is considerable evidence to show as individuals migrate from resource poor rural settings to urban areas and westernized countries such as the United States and United Kingdom, the risk and prevalence for T2DM rises. This increase is due to rapid acculturation associated with the migration. Although the concept of acculturation originated within anthropology, in recent years it has assumed a prominent role within epidemiology as a risk factor for chronic disease. The association between acculturation to a Western lifestyle and prevalence of diabetes has been established in several Asian American subgroups due to changes in diet, obesity and other lifestyle factors modulating the prevalence of T2DM. Consumption of sugar-sweetened drinks increases the risk for obesity and predisposes to T2DM. Recent data suggests an increase in the consumption of high fructose corn syrup and association between obesity and T2DM in the US. Glycemic index, or GI, is a number between 0 and 100 that reflects the effects of carbohydrates from food on an individual’s glucose levels. Glycemic index is important for individuals with T2DM since higher GI will increase sugar levels. Foods rich in dietary fiber might be protective and vegetarian diets tend to have less saturated fat and high dietary fiber.

Saturated fatty acids are positively related to fasting and postprandial glucose levels in normoglycemic Dutch men, the effect being independent of energy intake and obesity. In the United States, studies show the relative risk of developing diabetes was significantly reduced amongst those with the highest intake of vegetable fats and fiber. While light to moderate intake of alcohol is associated with enhanced insulin sensitivity, smoking increases the risk for T2DM. Intervention trials indicate diet and exercise programs are associated with reduction (nearly 60%) in the risk of progression of pre-diabetes to T2DM. Diets restricted in saturated fatty acids and increased fiber content seems to be particularly successful in this context. Furthermore, weight loss is beneficial and reduces the risk for T2DM.

### Conclusions

Asian Indians are disproportionately burdened by T2DM and related complications. Increased genetic susceptibility may be enhanced by environmental triggers such as physical inactivity, high calorie, fat, and sugar intake, and obesity as individuals migrate from rural areas to urban areas to Westernized countries. Acculturation, defined as the process of adopting the cultural traits and social patterns, and western lifestyle are associated with unhealthy habits such as increased intake of dietary fat and saturated fat, lower consumption of fiber-rich and low glycemic index foods, and physical inactivity. These unhealthy behaviors are associated with higher risk and prevalence of T2DM and diabetes-related complications.

**Ranjita Misra, PhD, CHES, FMALRC is a Professor and Research Director, Center for the Study of Health Disparities, at Texas A&M University. She is also a member of the Intercollegiate Faculty of Nutrition at TAMU and a member of the Public Health Committee of AAPI. Contact information (979) 845-8726 or ranjitamisra@gmail.com.**

**TG Patel, MD, MACP is an Associate Professor of Medicine at the Uniformed Services University of the Health Sciences, Bethesda, MD. Contact information (571)213-5393 or thakorg@gmail.com.**

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# Chapter 3

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## Preventing Heart Disease in Asian Indians: Diet & Lifestyle Recommendations

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Geeta Sikand, MA, RD, FADA, CDE, CLS

Prevention of heart disease among Asian Indians or South Asians (includes Bangladesh, Nepal, Pakistan and Sri Lanka) is a major concern. The occurrence of heart disease among Asian Indians is significantly higher worldwide. According to a recent World Bank Report, heart disease is the leading cause of death in Asian Indian adults (ages 15 to 69 years). All South Asian countries and India in particular are facing a “health crisis” with rising rates of heart disease, diabetes, obesity, unhealthy diet and low levels of physical activity. The report has also predicted that if the treatable risk factors e.g. excess body weight, blood pressure and LDL cholesterol remain untreated; it could lead to a global epidemic of heart disease in low and middle income countries.

By 2030 heart disease will emerge as the primary cause of death (36%) in India. A recent study of 52 countries showed that Asian Indians or South Asians suffer their first heart attack six years earlier (53 years versus 59 years) than other countries worldwide.

Heart disease is also the leading cause of death in women in every major developed country e.g. US and also in most emerging economies. The myth that heart disease is only a “man’s disease” has been debunked.

### What is Heart Disease?

Heart disease refers to diseases of the heart and the blood vessels due to atherosclerosis.

Atherosclerosis begins with the deposition of cholesterol filled cells in the inner wall of blood vessels. Due to inflammation, a plaque is formed in the blood vessels. A plaque is a thickened wall of the artery. A damaged plaque can cause a blood clot with very rapid narrowing or blockage of the artery. A heart attack occurs when the blood flow to a part of the heart is blocked (often by a blood clot). Your diet and other lifestyle choices can affect your blood cholesterol and triglyceride levels. The good news is that heart disease can be prevented and treated with current knowledge. At the conclusion of this chapter a nutshell of six strategies geared towards how Asian Indian can adopt a heart-healthy diet will be provided. The same strategies will be helpful for the treatment of high LDL, high triglycerides and the metabolic syndrome.

### Risk Factors for Heart Disease

Risk factors increase the chances of a person developing atherosclerosis and heart disease. According to the National Cholesterol Education Program (NCEP) Adult Treatment Panel III guidelines, the major risk factors for heart disease are:

- Cigarette smoking
- Diabetes mellitus (fasting plasma glucose equal to or greater than 126 mg/do
- Hypertension (Blood Pressure equal to or greater than 140/90 mmHg)

- High LDL cholesterol (equal to or greater than 100)
- Low HDL cholesterol (men less than 40 mg/dl, women less than 50)
- Obesity (Body Mass Index greater than 25)
- Lack of physical activity
- Family history of premature heart disease (presence of heart disease in male first-degree relative less than 55 years & in female first-degree relative less than 65 years)
- Age (men greater than 45 years; women greater than 55 years)

### **Additional risk factors**

Your physician will determine whether you need these additional tests.

1. Lipoprotein (a),
2. Remnant lipoproteins
3. Small LDL particles
4. Fibrinogen
5. High-sensitivity C-reactive protein (CRP)
6. Impaired fasting plasma glucose (110-125 mg/dl),
7. Presence of subclinical atherosclerosis (measured by exercise testing, carotid intimal-medial thickness [CT scan], and/or coronary calcium [EBCT]).

Presence of diabetes doubles the risk of heart disease in men and quadruples the risk in women. Lack of healthy dietary habits and a lack of physical activity along with overweight increase the risk of heart disease, diabetes, high blood pressure and stroke. Asian Indians have a higher prevalence of high triglycerides, low high density lipoprotein (good cholesterol) levels, glucose intolerance, and central obesity. Metabolic syndrome or pre-diabetes is also common in Asian Indians. Some adults as well as children are also at a higher risk for developing heart disease associated with high LDL cholesterol (bad cholesterol) and high triglycerides due to

overweight and diets high in fat and refined sugars. Genetic factors also play a role in heart disease.

### **Target Numbers for Asian Indians to Prevent Heart Disease**

- Non HDL-Cholesterol less than 130 mg/dl (Total Cholesterol-HDL= Non HDL-Cholesterol)
- LDL-Cholesterol less than 100 mg/dl
- HDL-C greater than 40 mg/dl for males and greater than 50 mg/dl for females
- *Blood pressure*: less than 140/80 mm
- *Waist Circumference*: less than 35" for men and less than 31" for women

### **Target Numbers for Asian Indians with Heart Disease or Diabetes**

- Non-HDL-Cholesterol less than 100 mg/dl
- LDL-Cholesterol less than 70 mg/dl
- HDL-Cholesterol greater than 40 mg/dl for males and greater than 50 mg/dl for females
- HbA1c less than 6.5
- *Blood pressure*: 120/80 mm if you are a diabetic
- *Waist Circumference*: less than 35" for men and less than 31" for women

It is important to achieve the target numbers as noted above. If any of your numbers are abnormal, the information provided in this chapter will help you understand the role of a heart healthy diet and lifestyle in preventing heart disease. This chapter also provides six practical strategies geared towards the Asian Indian cuisine. It is also important to seek your physician's advice, take medications under medical supervision so as to reach your target numbers. A registered dietitian (RD) could also partner with you to help you achieve your target numbers. To find a registered dietitian (RD) in your area: [www.eatright.org](http://www.eatright.org) Click on the "Find a Nutrition Professional" link toward top of the page.

### **What is HDL cholesterol**

High-density lipoprotein is a part of the total cholesterol measurement. It is often referred to as “good” cholesterol. The recommended level for men with diabetes is greater than 40mg/dl and for women with diabetes is greater than 50 mg/dl.

### **What is LDL cholesterol**

Low-density lipoprotein is a part of the total cholesterol in the blood. It is often referred to as “bad” cholesterol. LDL should be less than 70mg/dl for those with diabetes and/or heart disease.

### **Dietary Recommendations to reduce LDL (bad) cholesterol level**

The National Cholesterol Education Program Adult Treatment Panel III recommends:

1. Adjust caloric intake to achieve and maintain a healthy weight. Weight gain raises LDL (bad) cholesterol and triglyceride levels in the blood.
2. Choose a diet low in saturated fat (less than 7% of caloric intake), trans-fat (less than 1 % of caloric intake) and dietary cholesterol (less than 200 mg/day) by consuming a diet high in fish (especially fatty fish), non-fat dairy products, small amounts of lean meat and/or lean meat-alternatives e.g. dry beans e.g. rajma, channa, soybeans (like edamame), lentils (daal) and tofu.
3. Include food sources of plant sterols & stanols. At the recommended dosage of 2 gm per day, plant sterols reduce cholesterol absorption in the intestine by up to 30% and reduce LDL “bad” cholesterol by 10%. Plant sterols have the same chemical structure as animal cholesterol which blocks the absorption of cholesterol eaten in the diet as well as cholesterol manufactured by the liver.
4. Increase intake of viscous (soluble) fiber to 7-13g daily e.g. oats, fruits such as strawberries, apples, vegetables such as okra, eggplant, brussel sprouts and legumes such as lentils. Soluble fiber can lower LDL cholesterol 3-5%.

It is recommended that adults eat 21 to 38 grams of total fiber daily.

### **Diet & Lifestyle Recommendations for Heart-Health**

A heart healthy diet includes fish (if religion permits), fruits, vegetables, fiber, low-fat dairy products and low in salt and saturated fat. This dietary pattern is recommended for lowering LDL (bad) cholesterol and blood pressure when accompanied by regular physical activity and weight loss (if overweight). Regular physical activity at a moderate-intensity level for at least 30 minutes on most days of the week helps make your heart stronger and can help manage your weight.

- Enjoy your food, but eat less. Avoid oversized portions.
- Maintain a healthy weight or a BMI, (body mass index) of less than 23. Waist circumference should not exceed 35” in Asian Indian men and 31” in Asian-Indian women.
- Make half your plate fruits & vegetables.
- Switch to fat free or low fat milk (1%). Reduce calories from solid fats and added sugars (So FAS) and choose foods high in potassium, dietary fiber, calcium, and vitamin D.
- Reduce salt by comparing sodium in foods e.g. soup, bread & frozen meals & choose foods with lower numbers.
- Drink water instead of sweetened beverages.
- Regular physical activity can also help you manage your cholesterol by raising your “good” HDL levels and lowering your triglyceride levels.

*Source: 2010 US Dietary Guidelines  
(www.dietaryguidelines.gov)*

### **Summary of a Heart Healthy Diet Pattern based on 2000 Calories per Day**

- *Fruits and vegetables:* 4.5 cups daily (one serving= 1 cup raw leafy vegetable, ½ cup raw or



cooked vegetable, ½ cup vegetable juice; 1 medium fruit, ½ cup fresh fruit).

- *Fish*: 2 servings per week if religion permits (1 serving= 4 oz cooked fish preferably fatty fish e.g. salmon, mackerel, catfish).
- *Legumes or lentils*: Vegetarians: 5-7 times per week e.g. lentils, daal, rajma, channa and for non-vegetarians: at least 2 times per week (one serving= ½ cup cooked legumes or lentils)
- *Whole grains*: 3 servings per day choose from 1 slice whole grain bread, 1 oz dry whole grain cereal, ½ cup cooked whole grain brown rice, ½ cup whole grain pasta, 1-6" chapati.
- *Fiber*: 30 g daily (choose legumes, vegetables, fruits, whole grains, oats, rye, bran cereal, berries, brown rice etc); 7 to 13 gm soluble fiber e.g. whole oats, rye, barley.
- *Nonfat Dairy Products*: 2 to 3 servings per day (choose from 1 cup non fat or 1% milk, non-fat yogurt, 1% buttermilk),
- *Fats & oils*: 4 to 6 tsp daily (choose monounsaturated or polyunsaturated oils e.g. canola, corn, olive, soybean, safflower oil)
- *Nuts and seeds*: 2 to 4 times per week (⅓ cup or 1 ½ oz nuts, avoid macadamia nuts and salted nuts, 2 tablespoon or ½ oz seeds).
- *Sugar*: limit to 5 servings week (1 serving= 1 tablespoon sugar, jelly or jam)
- Saturated fat 7%/total energy intake ( fat on meat or chicken skin, packaged desserts, whole milk, ice cream, butter, cheese, sour cream etc.
- Trans-fatty acids 0 grams (found in processed foods e.g. cookies, chips, Indian savory snacks and fried foods).
- *Cholesterol*: limit to 200 mg daily (found in animal meats, organ meats, eggs, etc).
- *Alcohol*: if you drink it is recommended you limit to 1 serving per day (women) and 2 servings per day (men). (1 serving= 5 oz wine, 12 oz beer, 1.5 oz of 80-proof spirits, or 1 oz of 100-proof spirits))

- *Sodium*: 1500 mg per day (read food labels, prepare food with as little salt as possible).

### **What is the metabolic syndrome?**

Metabolic syndrome is the primary cause of an increase in heart disease in Asian Indians.. The American Heart Association and the National Heart, Lung, and Blood Institute recommend that the metabolic syndrome be identified as the presence of three or more of these components:

1. *Central obesity measured by elevated waist circumference in Asian Indians: Waist circumference in Asian Indian Men*: greater than 35" Asian Indian Women: greater than 31"
2. *High triglyceride*: Equal to or greater than 150 mg/dl
3. *Reduced HDL ("good") cholesterol*:  
Men – Less than 40 mg/dl  
Women – Less than 50 mg/dl
4. *High blood pressure*: equal to or greater than 130/85 mm Hg
5. *High fasting glucose*: 100 to 125 mg/dl ( pre-diabetes)

Other components of the metabolic syndrome (insulin resistance and pro-thrombotic state) cannot be identified by routine clinical evaluation. However, in the presence of central obesity, they can be assumed to be present to some degree.

### **Metabolic Syndrome Treatment Recommendations by American Heart Association**

The primary goal of treating the metabolic syndrome is to reduce the risk for heart disease and type 2 diabetes. Combining a heart healthy diet pattern and regular physical activity with even a small amount of weight loss (7-10%) in overweight person can reverse the metabolic syndrome. The primary approach is to reduce the major risk factors for cardiovascular disease: stop smoking and reduce LDL cholesterol, blood pressure and glucose levels to the recommended levels by:

1. Weight loss to achieve a desirable body weight (BMI less than 25 kg/m<sup>2</sup>)
2. Increased physical activity, with a goal of at least 30 minutes of moderate-intensity activity on most days of the week. Seek your physician's approval before starting your exercise program.
3. Healthful eating habits that include reduced intake of salt, saturated fat e.g. butter, ghee, coconut, coconut oil and coconut milk, palm oil, fatty meats, Trans fat e.g. vanaspati (Dalda), partially hydrogenated oils used in Indian savory snacks and dietary cholesterol e.g. egg yolks, meat, dairy.

### **What are triglycerides?**

Triglycerides are a type of fat found in the blood. If triglycerides levels are high, they can increase the risk of heart disease. Triglycerides are stored in the fat cells. When caloric intake is excessive, the additional calories are converted into triglycerides (fat) and stored in fat cells. This is how the body stores its body fat. Take your triglyceride number seriously. Extremely high triglyceride (1000 or higher) can cause pancreatitis (inflammation of the pancreas). Several risk factors can increase the risk for very high triglycerides:

- Overweight / obesity
- Lack of exercise
- High LDL( bad) cholesterol and low HDL (good) cholesterol
- Type 2 diabetes
- Certain medications
- Family history

**Table 1: National Cholesterol Education Program (NCEP) cut points for normal to very high triglyceride levels**

Normal	Less than 150mg/dL
Borderline-high	150-199 mg/dL
High	200-499 mg/dL
Very High	500 mg/dL or higher

***Blood levels of triglycerides are measured in the fasting state after a 12-hour fast and no alcohol for 48 hours before the blood test.***

### **To lower triglycerides**

The National Cholesterol Education Program Adult Treatment Panel III recommends:

1. Weight loss of 7 to 10% of body weight should be encouraged if indicated.
2. Avoid excessive intake of carbohydrate (not more than 50% of calories) especially refined carbohydrates e.g. sugar and sweets
3. Choose fats wisely and lower the intake of fat to not more than 35% of calories in the diet.
4. Eat plenty of vegetables, fruits and whole grains, non-fat milk and non -fat dairy products, choose fatty fish, lean meat and lean meat alternatives e.g. tofu, soybeans lentils and legumes
5. Abstain or limit alcohol intake according to your doctor's instructions
6. Include regular physical activity such as walking for a minimum of 30 minutes on most days of the week.

### **Are fats & oils bad for a heart healthy diet?**

All fats and oils are high in calories and can cause weight gain when excessive calories are consumed. However, some fats are good for heart health provided their calorie contribution does not cause weight gain. Fats are divided into 3 types based on the main type of fat they contain.

#### ***1. Unsaturated fats***

Unsaturated fats are liquid at room temperature and are generally considered "good fats" such as omega-3 (marine and plant derived), monounsaturated and polyunsaturated fats (omega-6).

#### ***Marine derived Omega-3 fatty acids***

Marine derived Omega-3 fatty acids found in fatty fish e.g. salmon are considered as "good fats" for

two reasons. Firstly, they can lower the risk of heart disease and secondly lower triglycerides. Two servings (3.5 oz each) of fatty fish per week are associated with a 30-40% reduced risk of death from a heart attack or stroke in persons without heart disease. Fatty fish are a good source of omega-3 fatty acids e.g. eicosapentanoic acid (EPA) and dexamhexanoic acid (DHA). If religion permits it is important to consume fatty fish. Good sources of marine omega -3 fatty acids:

- Salmon, farmed or wild
- Mackerel
- Herring
- sardines

*Methyl mercury concerns from eating fish*

- Limit eating large fish due to greater mercury content such as:
  - Swordfish
  - King mackerel
  - Albacore tuna
  - Shark
  - Tile fish

It is advisable for pregnant women and young children to avoid eating these fish according to the United States Food and Drug Administration/Environmental Protection Agency.

*Plant derived Omega-3 fatty acids*

Plants can also be a source of omega-3 fatty acids primarily alpha-linolenic acid (ALA). However, very small amounts of ALA convert to EPA and DHA.

Two to three grams/day of ALA may reduce risk of heart disease. Good sources of ALA (plant omega 3) are:

- Canola oil 1TBS = 0.94 g/serving
- Ground flax seeds 1 TBS=1.6 g/serving
- Flaxseed oil 1 TBS=7.3 g/serving
- English walnuts 1 TBS (7 halves) = 2.6 g/serving
- Soybean oil 1 TBS =0.94 g/serving
- Chia seeds (sabza) 1 tsp =1.7 gm/serving

Chia seeds are a good source of plant omega 3 ALA. One ounce of chia seeds "sabza" provide 5 gm of ALA. Chia seeds are also a good source of antioxidants, fiber and calcium. This petite whole grain has a mild flavor and can be eaten whole or ground, raw or cooked. Chia seeds can be soaked in water and added to salads, dhal or chapatti flour. Try them sprinkled on yogurt, salad and soup or tossed with rice. Traditionally chia seeds are used in Indian desserts that are high in saturated fat and calories e.g. kulfi faluda. To increase intake of ALA, flax seed powder can also be used in preparing curries like sambar or dhal (lentil soup), vegetables, chappatis and salad dressing.

*Monounsaturated fat (omega-9)*

Monounsaturated fat (omega-9) are considered “good” fats because they may lower LDL (bad) cholesterol and may help raise HDL (good) cholesterol. Good sources of monounsaturated fats are:

- Olive oil, canola oil, peanut oil
- Avocados, olives (high in sodium)

**Table 2: American Heart Association Recommendations for Omega-3 Fatty Acids (2002)**

<b>Population</b>	<b>Recommendation</b>
<b>Persons who do not have heart disease</b>	Eat a variety of fish (preferably oily) at least twice a week, include oils and foods rich in ALA
<b>Persons who have heart disease</b>	Consume 1 gm of EPA+DHA per day, preferably from fatty fish. Supplements could be used in consultation with a physician

- Nuts: almonds, peanuts, pecans, pistachios, hazelnuts

### *Polyunsaturated fat (omega- 6)*

Polyunsaturated fat (omega- 6) are considered “good” fats because they help lower LDL (bad) cholesterol when used in place of saturated fat. Good sources of polyunsaturated fat (omega 6) are:

- Corn oil, safflower oil, sunflower oil
- Sunflower seeds

### *2. Saturated fats*

Saturated fats are considered “bad” fats because they can raise LDL (bad) cholesterol. Saturated fats should be avoided or eaten in small amounts. Saturated fats are solid at room temperature. Sources of saturated fat are:

- Fatty cuts of lamb, pork, beef, poultry with skin, beef fat, lard, bacon, sausage, hotdogs
- Whole milk & whole milk dairy products: butter, cheese, cream, ice-cream, yogurt made from whole milk
- Palm oil, palm kernel oil and coconut oils

### *3. Trans-fats*

Trans-fats are also considered “bad” fats because they can raise “bad” LDL cholesterol and should be eaten in small amounts. Trans-fats are primarily man-made from vegetable oils as a result of food processing which changes vegetable oils into semi-solid fats e.g. partially hydrogenated fats. Trans-fats are also produced when oil is re-used. Trans-fats are also found naturally in meat, cheese, butter and dairy products. Sources of trans- fat are:

- Baked goods: pastries, cakes, donuts, cookies
- Fried foods: French fries, fried chicken, onion rings, Indian savory snacks cooked in re-used oil e.g. chevda, bhel
- Stick margarine, shortening, dalda (vanaspati)

### *Diet to lower blood pressure*

Although some salt is essential to maintain life excessive intake of salt (sodium chloride) can raise blood pressure. The American Heart Association recommends no more than 1500 mg of sodium per day. A high salt intake also has effects causing damage to the heart, kidneys, and arteries independent of blood pressure. Be aware of how much salt is added to food during preparation and also read labels of ready-prepared foods. In addition to a low salt diet a blood pressure lowering diet should also be low in saturated fat and high in vegetables, fruits and non-fat dairy products. Weight loss and increased physical activity are also important components of a blood pressure lowering diet,

### *Six strategies for a heart healthy diet for Asian Indians*

The following six strategies are practical tips geared towards the Asian Indian cuisine. For regional cuisines, refer to the variety of regional cuisines in this book e.g. Bengal, Gujarat, Maharashtra, North India, South India and Nepal.

#### **Strategy # 1 Protein Foods: 2 to 3 Servings Daily**

- One serving includes ½ cup cooked lentils (dhal or dals or daals) or ½ cup cooked dry beans (rajma, channa, soy beans), or 2-3 oz each of protein foods e.g. lean meat, fish or poultry (chicken & turkey) or 4 oz tofu or one egg plus two egg whites combined.
- Choose a variety of protein foods if your religion allows. Good food sources of protein include beans, lentils, seafood, poultry, lean meat and egg whites. Fatty fish e.g. salmon is an excellent source of omega 3 fatty acids (good fat).
- Eat fish twice at least per week if religion permits. Increase the amount and variety of fish and seafood consumed by choosing seafood in place of some meat and poultry if your religion permits. Fish with lowest mercury

are preferred. These fish are smaller in size e.g. salmon, pollock, catfish, cod, clams, flounder, sole, canned light tuna, shrimp, crabs and scallops.

- One egg three times per week is quite acceptable in an otherwise low saturated fat/low cholesterol diet. Substitute frequently with egg whites e.g. egg white omelets. Egg whites have no fat or cholesterol while they are an excellent source of protein.
- Tofu is a good source of protein especially for vegetarians. To reduce saturated fat, consume tofu in place of paneer in “palak paneer” or “matar paneer”.
- Lentils (daals) or legumes (rajma, channa, black-eyed beans) prepared with only a small amount of oil are an excellent source of protein and soluble fiber.
- Soybeans (edamame) are an excellent source of protein & fiber. Legumes (dried beans and lentils) including “daal” are naturally low in fat, high in protein and carbohydrate, plant sterols and fiber.
- Vegetarian burger patties can be convenient and nutritious alternative to the meat patties. Check the total fat, saturated fat and cholesterol content on the label.

### **Strategy # 2 Dairy Products 2 to 3 Servings Daily**

- One serving includes 1 cup = 8oz non-fat milk or 1% milk or low fat buttermilk or non-fat yogurt.
- Increase intake of fat-free or low-fat milk and milk products, such as milk, yogurt, cheese, or fortified soy beverages.
- Select evaporated skim milk or non-fat powder milk or non-fat yogurt when making fruit smoothies, fruit shakes and desserts. Use 1% milk or evaporated skim milk (along with sugar substitutes) when preparing Indian desserts e.g. kheer, payassam, paneer or chenna.

### **Strategy # 3: Vegetables & Fruits 8 Servings (4.5 Cups) Daily**

- Increase vegetable and fruit intake. Eat a variety of vegetables, especially dark-green and red and orange vegetables and beans and peas.
- Consume a higher intake of vegetables than fruits. Fruits are higher in carbohydrate as well as calories than vegetables. For e.g. one serving of a vegetable equals ½ cup cooked or 1 cup raw=25 calories and one serving of a fruit = one small to medium fruit or ½ cup fresh fruit=60 calories.
- Select green vegetables in place of starchy ones as starchy vegetables are higher in calories and carbohydrate. Consume leafy green vegetables (spinach, cabbage, kale, mustard greens) & cruciferous vegetables (cauliflower, brussel sprouts, broccoli) either raw or prepare them in a small amount of oil

### **Strategy # 4: Whole Grains: 6 Servings Daily**

- Consume at least half of all grains as whole grains. Increase whole-grain intake by replacing refined grains with whole grains. Reduce the amount of rice/chappatis when potatoes or other starchy vegetables are also included in the same meal.
- Select 100% whole wheat chapatti flour. Add oatmeal (high in soluble fiber) &/or soy flour (high in protein) to chapatti flour. To control calories, avoid putting ghee/oil when making chappatis.
- Substitute other whole grains for rice & pulao e.g. quinoa (high in protein), barley and oats (high in soluble fiber), brown rice (high in fiber).
- Choose foods with soluble fiber to help lower LDL cholesterol (bad cholesterol) e.g. whole oats, barley, dried beans, fruits and vegetables such as okra, brussel sprouts.
- Limit the consumption of foods that contain refined grains cooked with solid fats (butter,

ghee, shortening) and added sugar e.g. cookies, cakes, pies and Indian sweets such as laddoos, mathris, shakarparas.

### **Strategy # 5: Fats & Oils 4-6 tsp Daily**

- 1 serving = 1 tsp oil or 6 almonds, or 2 walnuts or 2 TBS avocado
- Prepare foods using lower fat cooking methods such as grilling, broiling and baking instead of frying and sautéing. To reduce caloric intake, cook with a minimum amount of oil.
- Avoid ghee, butter, whole milk & cream in food preparation & processed foods to reduce saturated fat intake. Avoid coconut or coconut cream or use lesser amounts than called for in the recipe. Although coconut and coconut cream are high in saturated fat, coconut water (nariyal- paani) is not high in saturated fat. Limit use of whole milk in Indian tea “chai” because it adds saturated fat in the diet.
- Limit consumption of sweets e.g. pastries, kulfi, rasmalai, kheer, barfi, halwa pedas, pies, cakes and cookies. These are generally prepared with saturated fat e.g. butter, ghee and whole milk and may raise LDL cholesterol, triglyceride and body weight.
- Avoid foods high in trans-fats. Like saturated fat, trans- fats raise LDL cholesterol levels & may lower “good” HDL cholesterol. Re-use of cooking oils increases the trans-fat content of the oil. Trans-fats are found in Indian savory/snack foods e.g. mathri, shakar paras chewda, bhel, sev etc. These are made with saturated fat and trans-fat e.g. ghee, shortening (vanaspati) and re-used cooking oils.
- Select a heart healthy spread (free of saturated and trans- fat) instead of butter or ghee, Read the label to make sure there is no "partially hydrogenated" oil in the ingredients list. Then look for as little saturated fat as possible. Look for spreads with less than a total of 2 grams from saturated and trans-fat per serving. Also look for “light” or “lite” spreads as they are half

the calories and also half the fat of regular spreads.

- Plant sterols and stanol-esters are found primarily in fortified foods e.g. Bennecol spread and Promise Activ spread. Only 2 or 3 tablespoons of these spreads containing plant stanol esters provide 2 grams of plant stanols and may lower LDL cholesterol by 7-15 %. Beverage supplements containing plant sterols such as Cholest-off and Minute Maid Heart Wise orange juice may also help lower LDL cholesterol. Plant sterols in food or supplements should be consumed with meals because they help to lower the absorption of dietary cholesterol. The largest LDL cholesterol lowering response is noted when the dose is spread over two or 3 meals per day. Higher doses above 2 g/day offer little additional benefit. Since plant sterol/stanol fortified spreads and supplements also provide calories, other sources of fats should be reduced to maintain caloric intake to avoid weight gain.
- Avoid excessive intake of nuts and avocados as they are high in calories and may lead to weight gain. However, inclusion of few unsalted nuts e.g. walnuts, almonds, peanuts, pistachios in a heart healthy diet may decrease LDL cholesterol when weight is not gained. When weight is not gained, consumption of 5 oz of unsalted nuts per week is associated with a reduced risk of heart disease.
- In Indian restaurants select appetizers and entrees cooked in a tandoor. Good choices for appetizers are tandoori fish, tandoori vegetables, vegetable salads, fruit salads (fruit-chaat) & roasted papadam with mint chutney. Avoid entrees prepared with added cream or butter or fried foods.

### **Strategy # 6 Decrease your Salt Intake to 1500 mg Sodium Daily to Lower Blood Pressure**

- The American Heart Association and the recent US dietary guidelines recommend less than 1500 mg of sodium per day. This sodium

goal is lower than in previous guidelines because new data support this limit.

- Reduce salt intake by cooking with as little salt as possible.
- Compare sodium in foods by reading labels e.g. soup, bread & frozen meals. Choose foods with lower numbers.
- Substitute salt with herbs & spices e.g. cilantro, mint, cumin, black pepper, lemon.
- Avoid highly salted foods e.g. salted nuts, pickles, chutneys and salted savory/snack foods e.g. chevda, bhel etc.
- Prepare savory snack foods e.g. chewda, bhel etc at home with minimum salt and oil. To reduce salt in the recipe, enhance flavor by using more spices e.g. amchur, cumin, asafetida.

### **Alcohol Guidelines**

If you drink and if your physician approves because you have no medical reasons not to drink alcohol, you should limit to one drink or less per day for women and two drinks or less per day for men. In general, one drink is 1 jigger or 1.5 oz hard liquor (80 proof spirits) e.g. whiskey, bourbon, vodka etc or 5 oz dry red or white wine or 12 oz beer.

### **What is the role of vitamin supplements and antioxidants in preventing heart disease?**

Vitamin C supplements in combination with vitamin E and/or beta carotene have not shown any benefit in the prevention of heart disease. Some studies have shown they could be harmful. Vitamin D is also under study. It is expected that ongoing research will shed further light on the role of vitamin D supplementation in the prevention of heart disease.

### **Do you need a Registered Dietitian (RD)?**

A registered dietitian has expertise in nutrition. With the help of a RD, a heart healthy meal plan will be developed while taking your personal food preferences and medical history and lab reports into

account. Follow up visits with your RD are also recommended to reach your heart health goals. This is referred to as medical nutrition therapy (MNT) by a registered dietitian (RD).

**Geeta Sikand, MA, RD, CDE, CLS is a consultant dietitian in private practice in Irvine, California and an Associate Clinical Professor of Medicine: Cardiology at the University of California Irvine. Contact information (949) 726-1840 or [gsikand@gmail.com](mailto:gsikand@gmail.com)**

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# Chapter 4

## Renal Diet for Asian Indians

Chhaya Patel, MA, RD, CSR

1 meat serving =

- 1 oz. of poultry, seafood, or fish
- 1 medium egg or ¼ cup egg substitute
- ¼ cup tuna
- 1 oz. natural cheese  
(Limit to \_\_\_\_\_ ounces per week.)
- ¼ cup cottage cheese  
(Limit to \_\_\_\_\_ per week.)

1 bread or starch =

- 1 slice of bread/Chapati/puri/½ nan
- ½ cup cooked rice or noodles
- ¼ pita (6 in. wide)
- ½ cup cooked cereal
- ¾ cup dry cereal
- ½ bagel or sandwich bun

1 vegetable serving =

- ½ cup vegetables
- 1 fruit serving =
- ½ cup canned fruit
- 1 medium-sized fresh fruit  
(about the size of a tennis ball)
- ¼ - ½ cup fruit juice

### Foods to Enjoy

- Fresh fish, eggs and poultry
- Enriched bread or pasta and rice
- Allowed vegetables and fruits
- Olive oil, butter or margarine

The following food and diet information will help you to eat as healthy as possible while receiving hemodialysis treatments.

### Protein

Protein is the backbone of the hemodialysis diet. It is necessary for growth and repair of body tissues. It helps your body fight infection and prevents loss of muscle. The highest quality protein comes from animals. Although plant foods have protein, the quality is low. Those on hemodialysis need high quality protein.

### Foods to Enjoy

#### Fish

- |            |                 |
|------------|-----------------|
| ▪ Bass     | ▪ Kingfish      |
| ▪ Catfish  | ▪ Perch         |
| ▪ Carp     | ▪ Salmon, fresh |
| ▪ Codfish  | ▪ Snapper       |
| ▪ Flatfish | ▪ Sole          |
| ▪ Grouper  | ▪ Tilapia       |
| ▪ Halibut  | ▪ Trout         |
| ▪ Haddock  | ▪ Tuna, fresh   |

#### Poultry

- |               |          |
|---------------|----------|
| ▪ Chicken     | ▪ Goose  |
| ▪ Cornish hen | ▪ Turkey |
| ▪ Duck        |          |

#### Seafood

- |           |            |
|-----------|------------|
| ▪ Clam    | ▪ Scallops |
| ▪ Crab    | ▪ Shrimp   |
| ▪ Lobster |            |



### Miscellaneous

- Eggs
- Egg substitute
- Cottage cheese

### Reminder!

Always remember to take your phosphorus binders with a meal or snack. Protein foods are high in phosphorus.

### Portion Guide for Protein Foods

- Half chicken breast is about 3 to 4 ozs.
- Chicken thigh is about 2 to 2 ½ ozs.
- Chicken leg is about 1 to 1 ½ ozs.
- Deli roast meats, 2-3 slices are about 3 ozs.
- 12 large shrimp are about 3 ozs.
- ¼ cup of unsalted tuna is 1 oz.
- 1 egg is equal to 1 oz.
- ¼ cup egg substitute is 1 oz.

### Dialysis and Protein Foods

Each time you have a hemodialysis treatment, protein is removed from your blood along with the waste products. The amount of protein you eat must be enough to replace that lost in hemodialysis and provide your daily requirements.

To determine whether you are getting enough protein, the amount of *Albumin* in your blood will be measured monthly. If your albumin is 4.0 or higher you are eating enough protein. Studies have shown that people on dialysis who have an albumin of 4.0 or higher live longer and healthier.

**These protein-rich foods are high in sodium and should be limited or used sparingly**

### Processed Meats

- Lunch meats
- Pickled fish
- Sardines/canned fish

### Other Foods

- Cheese
- Buttermilk
- Canned or frozen dinners
- Canned or packaged soup
- Fast foods
- Pot pies

**These protein foods are high in Potassium and Phosphorus. Check with your Dietitian before using**

- Pinto beans
- Brown beans
- Navy beans
- Red beans
- Black beans
- Lima beans
- Refried beans
- Purple hull peas
- Peanuts/peanut butter

### Can I be a vegetarian if I have chronic kidney disease?

If you are diagnosed with chronic kidney disease (CKD) and are a vegetarian you can remain as one. You do not have to start eating meat because you have CKD or have started dialysis. In order to continue with your vegetarian lifestyle as well as incorporate a renal diet, you will need to devise a meal plan to fit your nutritional needs. You should talk with a renal dietitian about foods that are kidney-friendly and vegetarian-specific. Here are some things your dietitian may implement for your new diet:

- Monitor your calorie intake to make sure you are getting enough calories.
- Include vegetarian sources of protein and calorie supplements when needed.
- Increase your phosphate binders that may be needed for meals and snacks.
- Lower potassium dialysate for those on dialysis to control potassium levels.

- Make sure your dialysis prescription is adjusted as needed for acceptable urea clearances.
- Provide resources and renal education material specific to your needs.

### **Kidney-friendly foods for a vegetarian**

Vegetarian diets can meet protein needs. Protein is made up of chains of amino acids, which are sometimes referred to as “the building blocks of life.” Plant foods contain many essential amino acids and some can be considered as complete protein foods. Some plant protein may lack one or more essential amino acids, but a variety of vegetarian foods can be combined throughout the day to provide adequate amounts of essential amino acids without consuming meat, eggs or milk. Plant protein can be enough to get adequate protein into your renal diet.

Protein enriched foods for vegetarians on a kidney diet can include:

- Meat analogs (meat substitutes such as soy burgers, tofu hot dogs and deli slices)
- Soy products (tofu, tempeh)
- Beans and lentils
- Nuts and nut butters
- Eggs and egg substitutes
- Dairy products
- Grains

The protein and nutrient content can vary for tofu products, soymilks and meat analogs. It is important to check product labels for the specific nutrient content per serving (such as protein, sodium, potassium, phosphorus, etc.). Powder and liquid protein supplements may be an option for patients with unusually high protein needs or who are unable to meet their protein needs by food alone. Eggs or egg substitutes are a source of HBV (high biological value) protein, also known as high quality protein. HBV protein can be consumed by lacto-ovo vegetarians.

### **Calories**

It is important that you eat a variety of foods—not just protein. If you do not get enough calories from foods other than those high in protein, your body will breakdown your muscle tissue to use for energy. You may need to add some high calorie foods to keep from losing weight or to regain weight you have lost.

**High calorie foods to enjoy (If you have diabetes, please consult your dietitian before using these foods)**

### **Candy**

- Mints
- Gum drops
- Hard candies
- Jelly beans
- Marshmallows

### **Cake**

- Angel food cake
- White/yellow cake with icing
- Coffee cakes without nuts
- Pound cake

### **Pie**

- Fruit pies with allowed fruits
- Lemon meringue pie
- Fruit tarts

### **Miscellaneous**

- Danish rolls
- Donuts (raised)
- Honey
- Jam or jelly
- Lemonade

- Vanilla sandwich cookies
- Sugar cookies
- Syrup
- Table sugar
- Toaster pastry
- Vanilla wafers
- Non-dairy whipped topping

### **Indian Desserts**

- Burfi
- Halwa

### **These foods are high in Phosphorus and/or Potassium. Please limit or avoid!**

- Candy with chocolate, nuts or peanut butter
- Chocolate cake
- Brownie
- Fudge
- Chocolate cookies
- Cream pies
- Sweet potato pie
- Pumpkin pie
- Milkshakes
- Nuts
- Potato chips
- Ice cream
- Burfi and Halwa
- Desserts made with milk

### **Helpful Hints for Adding Calories**

- Add sugar to beverages and cereal
- Add jam, jelly, honey or syrup to bread, muffins, and rolls
- Drink beverages that have calories
- Eat an allowed dessert daily
- Add whipped topping to dessert or fruits
- Eat allowed candies between meals
- Spread frosting on cakes and cookies

- Spread margarine or butter on hot bread or rolls
- Use margarine or butter on cooked vegetables, rice, noodles and cooked cereals
- Fry meats, fish or eggs in margarine or oil
- Add low salt gravies to your meat.
- Use mayonnaise or salad dressing on sandwiches and salads

### **More high calorie foods to enjoy**

*Fats can add a lot of the calories you may need if you want to gain or maintain weight.*

- Butter
- Ghee
- Margarine
- Cream cheese
- Cooking oil
- Mayonnaise

*Your portions of these foods will be reduced if you are on a low fat, low cholesterol diet. Please consult your dietitian.*

### **Phosphorus**

Phosphorus is a mineral that is necessary to build strong, healthy bones and teeth. It is also important in storing and efficiently using energy in body cells. When the kidneys are not working the phosphorus level can get too high. A high phosphorus level can make your bones weak and brittle and also lead to calcium deposits that can form in the blood vessels and soft tissues of your body. A good phosphorus level for people on dialysis is 3.5 to 5.5.

### **There are 3 ways to keep your phosphorus in good range**

- Come to and complete all of your dialysis treatments.
- Follow your diet.
  - Eat low phosphorus foods. Ask your dietitian to suggest some.

- See “Foods That May Cause Phosphorus Trouble” below.
- Take your **phosphorus binders**
  - Phosphorus is in almost all foods so it is important to take your phosphorus binders every time you eat.
- Kidney beans
- Blackeyed peas
- Pork and beans
- Soybeans

### **Phosphorus Binders**

Binders keep phosphorus out of your blood. **Phosphorus binders are taken with meals and snacks. Remember...the only way binders work is to take them with food.** Phosphorus binders come in many names: Renvela, Fosrenol, PhosLo, Calcium Carbonate (Tums), Alternagel are some of the names. Take the amount of binders that are prescribed for you! Your Dietitian or Doctor will tell you how much binder you need to take with each meal and snack to keep your phosphorus normal.

### **Foods that May Cause High Phosphorus (Please limit or avoid!)**

#### ***Dairy Products***

- Milk, eggnog
- Cheese
- Yogurt
- Pudding
- Custard
- Ice cream
- Cream soups
- Milkshakes
- Casseroles made with cheese

#### ***Dried Beans***

- Red or black beans
- Mung beans
- Lentils and Dals
- Navy beans
- Lima beans
- Pinto beans

#### ***Nuts and Seeds***

- Pecans
- Almonds
- Cashews
- Walnuts
- Peanuts
- Peanut butter
- Sunflower seeds
- All other nuts and seeds

#### ***Protein Foods***

- Enhanced meats
- Liver
- Oysters
- Canned salmon
- Organ meats
- Sardines

#### ***Whole Grains and Cereals***

- Bran
- Granola, trail mix
- Brown rice
- Bran muffin
- Whole grain breads
- Whole grain cereals
- Biscuit, canned, froz, or fast food

#### ***Other Foods***

- Beer
- Colas & all phosphoric acid-containing drinks
- Pizza
- Cocoa

- Molasses
- Macaroni and cheese
- Wheat germ
- Carmel
- Chocolate
- Dried fruits
- Coffee drinks made with milk
- Cake donuts
- Commercial pancakes and waffles
- Desserts made with milk

### **Helpful Hints to Lower Phosphorus**

- Use non-dairy milk substitutes, such as Mocha Mix®, Coffee Rich®, Coffee-Mate, Rice Dream® or Dairy Delicious® in place of milk on cereals and in recipes.
- Try cream cheese on crackers or sandwiches instead of cheese or peanut butter.
- When using cheese in cooking, choose the sharpest flavor and use less than the amount listed in the recipe.
- Enjoy sorbet, fruit ices, Italian ices, popsicles or sherbet instead of ice cream for a cool and tasty treat.
- Drink non-cola sodas. All cola drinks (diet and regular) contain phosphoric acid. Try some of the flavored seltzer waters or make your own. Check labels on canned or bottled beverages to make sure they do not contain phosphates.
- Eat popcorn (unsalted) instead of nuts for a snack.
- Choose hard candy as it has less phosphorus than chocolate.
- Try mixed vegetables instead of lima beans or corn with meals.
- If biscuits, pancakes, and waffles are a favorite, make them from scratch as mixes and commercial products are high in phosphorus.

### **Phosphate restriction for vegetarians with kidney disease**

About 50 to 70 percent of phosphorus is absorbed in the body from a typical diet of both plant and animal-based foods. In general, phosphorus is greater in animal products than from plant-based food. Much of the phosphorus in grains and legumes can be in the form of phytic acid, known as the main storage area of phosphorus in many plant tissues, which reduces the absorption of phosphorus to around 50 percent.

Legumes, nuts and seeds will need to be limited for patients with chronic kidney disease, if potassium and phosphorus levels become an issue. Consumption of a vegetarian diet may require an increase in the number of phosphate binders for patients in end stage renal disease (ESRD) or on dialysis.

### **Potassium**

Potassium (**K**) is a mineral that is necessary to keep your muscles functioning properly. The heart is your biggest muscle. That is why your heart is affected when potassium levels are too high or too low.

Healthy kidneys regulate the amount of potassium the body needs. In kidney failure, the amount of potassium in the body can get too high and cause dangerous problems.

*High Potassium in the blood may cause:*

- ↑ **K**
- Nausea
- Difficulty breathing
- Irregular heartbeat
- Cardiac arrest/heart attack
- Tingling In the extremities
- Loss of consciousness
- Slow or weak pulse



Low Potassium in the blood may cause:

- ↓ **K**
- Muscle weakness
  - Nausea, vomiting, diarrhea
  - Irregular heartbeat
  - Dizziness

**Normal Potassium Level is 3.5 to 5.5.**

- Your dialysis treatment helps control your blood potassium level. Make every scheduled treatment and stay the full length of the treatment.
- If your Potassium is **lower** than this you should talk to your Dietitian about getting more potassium in your diet.
- If your Potassium is **higher** than this you should limit the amount of potassium that you eat.
- Most of the Potassium in your diet comes from Fruits and Vegetables. Use the following tables to determine which fruits and vegetables are the best choices.

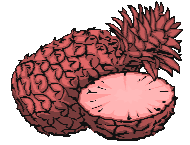
**Foods to Enjoy (Serving Size is ½ cup unless otherwise stated)**

### Fruits

- Apple, applesauce
- Apricots (1)
- Blackberries
- Blueberries
- Boysenberries
- Cherries
- Coconut
- Cranberries
- Cranberry sauce
- Figs (2)
- Fruit cocktail
- Grapefruit (½)
- Grapes
- Kumquats
- Lemon
- Lime
- Mandarin oranges, canned
- Peaches, cnd, fresh 1 small or ½ lge



- Pears, canned, 1 small or ½ lge
- Pineapple, fresh or canned
- Plums (2)
- Prunes (2)
- Raspberries



### Rhubarb

- Strawberries (5 medium)
- Tangerine (1)
- Watermelon (1 cup)



### Juices

- Apple
- cranberry
- grape
- pineapple
- peach nectar
- pear
- nectar
- apricot nectar

Grapefruit juice: *Discuss medication reactions with your dietitian or doctor.*

### Vegetables

- Asparagus
- Bamboo shoots, canned
- Bean sprouts
- Beets, canned
- Broccoli
- Brussels sprouts
- Cabbage
- Carrot
- Cauliflower
- Celery
- Collards
- Corn\*
- Cucumber
- Eggplant
- Endive
- Green beans, wax beans
- Kale
- Leeks



- Lettuce
- Mushrooms
- Mustard greens
- Okra
- Onion
- Parsley
- Peas, green\*
- Peppers, green or red, mild or hot
- Radishes
- Summer squash
- Spaghetti squash
- Snow peas
- Toria
- Turnips & turnip greens
- Watercress
- Waterchestnuts, cnd
- Zucchini



**Potatoes**-only if soaked 2 to 4 hrs to reduce potassium (Ask your dietitian about “Dialyzing” potatoes)

(\* allowed but high in phosphorus)

**Food that May Cause High Potassium (Please limit or avoid!)**

### **Fruits**

- Bananas
- Cantaloupe
- Casaba melon
- Dates
- Dried fruits
- Honeydew melon
- Kiwi
- Mango
- Nectarine
- Oranges
- Papaya
- Persimmons
- Starfruit (carambola)

(poisonous for dialysis pts, not based on K<sup>+</sup> content). Do Not Eat!

### **Juices**

- Orange juice
- Prune juice

Avoid any juices with added calcium

### **Miscellaneous Foods**

- Bran cereal
- Chocolate
- Salt substitute
- Lite salt
- Nuts and seeds
- Soy milk

### **Vegetables**

- Artichokes
- Avocado
- Bamboo shoots, fresh
- Beans, dried, ckd (kidney, lentils, lima, navy, pinto, soy)
- Beets, fresh and beet greens
- Cactus
- Chard
- Chinese cabbage
- Fenugreek leaves
- Kohlrabi
- Papadi
- Peas (dried)
- Pickles
- Potatoes, unless “dialyzed”
- Pumpkin
- Rutabagas
- Sauerkraut\*\*
- Spinach (cooked)
- Succotash
- Sweet potatoes
- Tomato
- Tomato paste, puree or sauce
- Tover
- Waterchestnuts, fresh

### **Juices**

- Carrot juice
- Tomato juice\*\*

- Prune juice
- Vegetable juices\*\*
- V-8 juice cocktail\*\*

\*\*also High Sodium

### Helpful Hint

Reduce the amount of potassium in vegetables by dialyzing them.

- Clean, peel and thinly slice or chop the vegetable.
- Cover vegetable with water and soak for one hour. *Potatoes should be soaked two to four hours or longer.*
- Drain the water and cook the vegetable your favorite way.

### Potassium restriction for vegetarians with kidney disease

Fruits and vegetables are the biggest source of potassium and may need to be limited for vegetarians with chronic kidney disease. Other foods high in potassium that vegetarians may use are soybeans, textured vegetable protein (TVP), soy nuts, soy flour, natto (soybean paste) and wasabi. Careful planning of these foods can be worked into a vegetarian diet. However, potassium amounts will need to be modified and levels monitored carefully.

### Sodium

Too much sodium can cause:

- High blood pressure
- Increased thirst
- Damage to the heart
- Difficulty breathing
- Puffiness and swelling

Therefore, you should limit the amount of sodium in the foods you eat.

### Sodium in Foods

- The main source of sodium in the diet is **salt**.

- Sodium generally comes from convenience foods, fast foods, processed and canned foods, and snacks that have sodium or salt added during their processing.
- To reduce the salt, and therefore sodium, in your diet, decrease your intake of processed foods. This means any food that has been processed. If a food is not fresh, it is usually high in sodium.

### Helpful Hints

- Many restaurants are providing nutrition information including sodium.
- Learn what foods contain large amounts of sodium and which foods have a small amount of sodium.
- Read labels. Compare different brands of similar items (like salad dressings) and choose the one with the least sodium.

Instead of	Use this
<ul style="list-style-type: none"> <li>▪ Canned vegetables</li> </ul>	<ul style="list-style-type: none"> <li>▪ Fresh or frozen vegetables, cooked</li> </ul>
<ul style="list-style-type: none"> <li>▪ Processed meats (ham, bacon, bologna, etc)</li> </ul>	<ul style="list-style-type: none"> <li>▪ Unprocessed meats, fish, seafood, or poultry, cooked without salt</li> </ul>
<ul style="list-style-type: none"> <li>▪ Convenience/ready made foods (boxed, canned, or frozen meals)</li> </ul>	<ul style="list-style-type: none"> <li>▪ Buy fresh natural ingredients and cook them with herbs and spices.</li> </ul>
<ul style="list-style-type: none"> <li>▪ Fast Foods</li> </ul>	<ul style="list-style-type: none"> <li>▪ Pack sandwiches using fresh, unsalted ingredients.</li> </ul>
<ul style="list-style-type: none"> <li>▪ Salted snack foods (chips, pretzels, etc)</li> </ul>	<ul style="list-style-type: none"> <li>▪ Eat fresh, crisp fruits and vegetables for crunch without salt; apples, carrots, green pepper strips, cucumber slices, etc.</li> </ul>

**Sodium restriction for vegetarians with kidney disease**

Sodium content of some vegetarian foods can be high. The foods with high sodium content are usually processed, commercially-produced plant proteins. To reduce sodium intake, the use of high sodium foods such as meat analogs, salted nuts, miso, frozen entrees, marinated tofu products, savory snacks and meals in a cup should be limited. In comparison to meat, meat analogs have much higher sodium content and need to be limited.

Type of meat	Amount of protein	Amount of sodium
Meat, 1 ounce	7 grams	25 mg
Meat analog	7 grams	260 mg

**Add a little spice...**

Mix these spices together and use instead of salt.

- Garlic powder
- Marjoram
- Thyme
- Parsley
- Savory
- Mace
- Onion powder
- Black pepper
- Sage
- Cumin
- Curry powder
- Garam masala

**Other low sodium seasonings to use**

Almond extract, allspice, anise, basil, bay leaf, caraway seed, cardamom, celery seed, chili powder, chives, cilantro, cinnamon, clove, cumin, curry, dill, dry mustard, garlic, garlic powder, ginger, horseradish, lemon juice, mace, maple extract,

onion powder, oregano, paprika, parsley, pepper, peppermint, poppy seeds, poultry seasoning, rosemary, saffron, sage, Tabasco® brand hot sauce only (other have added sodium), tarragon, thyme, vanilla extract, vinegar, Wright’s Liquid Smoke®, Mrs. Dash®.

**High sodium seasonings to avoid**

Accent®, BBQ sauce, seasoned salt such as Lawry’s®, celery salt, garlic salt, onion salt, Old Bay®, pickles, soy sauce, steak sauce, Worcestershire sauce.

Salt substitutes contain potassium chloride (KCl) and **should not** be used by hemodialysis patients. Check labels on seasoning blends to make sure KCl is not an ingredient. Morton’s Salt Substitute®, Nu-Salt® and Morton’s Lite Salt® all contain potassium.

**Foods That May Cause High Sodium**

**(Please limit or avoid!)**

- Processed cheese like American
- Canned or dried soups
- Canned vegetables or tomato juice
- Pizza, frozen dinners, pot pies
- Potato chips, corn chips, pretzels
- Salted microwave popcorn
- Salt pork
- Soy sauce
- Dill pickles and olives
- Barbecue sauce
- Saurkraut

**Fluids**

Your fluid intake must be balanced with the amount of fluid you excrete in your urine. If you drink or eat more fluid than you excrete daily you will retain fluid and gain “fluid weight”.

When measuring your fluids, use an 8 oz. cup or measuring cup.

1 cup liquid	= 8 oz.
½ cup liquid	= 4 oz.
½ cup ice cream	= 2 oz.
1 cup crushed ice	= 4 oz.
½ cup jello	= 4 oz.
1 cup soup	= 8 oz.
1 can soda	= 12 oz.
1 popsicle	= 3 oz.
1 cup tea or coffee	= 6 oz.

### **Here's a simple way to keep track of your daily fluid allowance**

1. Each morning, measure your daily fluid allowance in water and store it in a container.
2. Every time you drink some type of fluid or use any other fluid like ice, jello, or Popsicle; pour out an equal amount of water out of your container.
3. When all the water is gone, it will tell you that you have used up your fluid allowance and it is time to Stop!

Learn to stretch your fluid allowance to last you the whole day. Follow some of the hints provided below.

### **Helpful Fluid Hints**

- Drink only when thirsty. Don't drink from habit or to be sociable.
- Satisfy thirst by eating cold or frozen fruit such as grapes.
- Avoid high sodium/salty foods like canned soup, Chinese foods, fast foods, chips, etc.
- Rinse your mouth frequently with water, but don't swallow. Keep your mouth moist all the time.
- Chew gum. Sport gums are especially helpful.
- Have a piece of hard sour candy or bite down on a piece of frozen lemon wedge.

**Remember:** 2 cups of fluid will equal 1 pound of weight gain!

### **Fluid Foods: Visible Fluids**

- Water
- Milk, cream
- Soup
- Coffee
- Tea
- Lemonade
- Kool-aid
- Soft drinks
- Alcoholic drinks

### **"Hidden" Fluids**

- Ice
- Popsicles
- Gelatin
- Ice cream

**Here are some ideas to help you make good choices when dining out**

### ***Appetizers***

- Choose fresh, simple items to avoid salt
- Allowed fresh vegetables and fruits are a good choice

### ***Salad***

- Fresh salad of allowed fruits and/or allowed vegetables
- Ask for oil and vinegar dressing or dressing on the side so that you can control the amount you use
- Try squeezing lemon or lime over salad greens for a dressing

### ***Entrees***

- fish, seafood, chicken and other poultry
- Ask for gravies, sauces and marinades "on the side" so you can control the amount eaten

## *Renal Diet for Asian Indians*

- Vegetarians can substitute beans, lentils or tofu for meats
- Portions served in restaurants may be very large; watch your serving size and take excess home
- Grilled items are good choices
- Mixed dishes such as casseroles are generally high in phosphorus and sodium

### **Vegetables**

- Fresh, steamed, or fried; unsalted

### **Breads/Starches**

- Nan, Chapati, Paratha, Puris, White or Italian breads and rolls (without garlic salt)
- Idli, Dosa and rice products
- Pasta, macaroni, noodles and rice

### **Dessert**

- Allowed fruits, sorbet, angel food cake, plain cookies, gelatin
- Desserts with out milk products, Pies or cobblers made with apple, blueberry, cherry or lemon

### **Beverages**

- Tea (made from tea bag), coffee, iced tea(made from tea bag), lemonade, water (within allowed amount of fluids)

### **Dialysis Vitamins**

Hemodialysis removes water soluble vitamins. To stay your healthiest, you should replace these vitamins by taking a renal vitamin supplement. Your doctor will prescribe a vitamin for you. Please take only vitamin and mineral supplements that have been approved by your doctor, nurse or dietitian.

Take your vitamin after hemodialysis on dialysis days and anytime on other days.

A balanced vegetarian diet that includes a variety of plant foods is able to meet the needs for vitamins and minerals, as well. The position of the American Dietetic Association on vegetarian diets states, “appropriately planned vegetarian diets are healthful, nutritionally adequate and provide health benefits in the prevention and treatment of certain diseases.”

Iron, calcium, zinc, vitamin D and B12 should not be a concern for vegetarians on dialysis. The renal vitamin that hemodialysis patients are usually prescribed should contain vitamin B12 and zinc.

### **Nutritional Supplements**

A variety of nutritional supplements are available to provide nutrition when you are unable to eat enough or do not feel like eating. If you are having problems eating, your dietitian can provide information on supplements and recommend the best one for you.

**Chhaya Patel, MA, RD, CSR is DaVita Renal / Divisional Dietitian in the San Francisco Bay Area. She is a Certified Specialist in Renal Nutrition, the Area 1 Representative for Renal Practice Group of ADA, and she was Associate Chair and Region V representative for the Council on Renal Nutrition / NKF. Contact information 925-937-0203 or chhaya88@hotmail.com.**

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## Chapter 5

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# Eastern Indian Diet: Odia & Bengali Cuisine

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Ranjita Misra, PhD, CHES, FMALRC

The dietary habits of people in the Eastern coastal states of Odisha (language spoken is Odia) and West Bengal (language spoken is Bengali) include the consumption of both vegetarian and non-vegetarian food. It is rare to find strict vegetarians in this region since Brahmins of Odisha (previously called Orissa) and Bengal eat fish and meat (mostly chicken and mutton). Cooked with very little or, at times without oil, these two eastern states offer a variety of low-calorie delicacies. There are many similarities yet vast cultural and linguistic diversity exists, which along with the geographic heterogeneity makes the Odia and Bengali cuisine unique. Both regions have their distinctive food habits and cooking styles: Bhaja, Bhapa, Bhuna, Chachhari, Chhenchara, Dalma, Dalna, Dum, Ghanto, Jhol, Pora, and Tarakari. To the casual palate, the Eastern Indian food means rice and fish. Both states share the love for fish and rice due to the long coastline shared by them on the Bay of Bengal. Fish and other sea food such as crab and shrimp are in plenty in this region and so are the recipes. Rice is the staple food in Eastern India. The other characteristic features of coastal cuisines include the use of coconut in many recipes. Unlike other coastal kitchens, however, coconut oil is not commonly used. Instead, the preferred cooking medium is mustard oil or refined vegetable oil (mostly groundnut). Traditionally food was cooked on cowpat (made of dried cowdung), wood or charcoal fires but recent years have seen an emergence of gas, electric, and microwave ovens.

In terms of day-to-day cooking, Eastern Indians don't use many spices. The flavors are usually subtle, foods are delicately spiced unlike the fiery curries typically associated with Indian cuisine. The main seasoning is 'Panch phutana' (in Odia) or 'Panch Phoran' (in Bengali), which is a mixture of mustard seeds, coriander seeds, methi seeds, black coriander seeds etc. This mix is widely used for tempering vegetables and dhal/lentils, while garam masala, curry powder, and turmeric are commonly used for non-vegetarian curries. The other major ingredient is garlic and mustard seeds finely ground together, called as Besara in Odia and Sorsho Bata in Bengali. Odias and Bengalis are rice eaters and along with rice, a typical Odia or Bengali meal has to have a combination of a stir fried or deep-fried vegetable; lentils; a mixed vegetable curry typically cooked with garlic and mustard paste or saag made from various green vegetables such as spinach or fenugreek and seasoned with paanch puoran; and of course, the ubiquitous Maccher Jhol or fish curry.

Odia and Bengali cuisine recognizes and gives a place for the five basic tastes of astringent, bitter, sweet, sour and hot. While the Odia meal does not have a specific course of serving the food items, an authentic Bengali meal does. It begins with bitters, either in the form of shukto (a kind of stew with vegetables, drumsticks or bitter gourd) and moves on in stages through the dhals with fries and fritters, a vegetable dish like a ghonto or chhokka, to the non-vegetarian items of fish or meat. Before ending on a sweet note, there is the occasional treat of astringent or sweet chutney.

In general, Odia and Bengali meals include one or more of the following.

- Rice, white and parboiled (most commonly used). Rice is the staple food in Odisha and Bengal and is incorporated in many ways. For example puffed rice is used frequently for breakfast and snacks. Pakhala, a popular Odia dish consumed during the summer months, is made of cooked rice, water, and yoghurt.
- Rotis are consumed mostly at dinnertime or during breakfast.
- Dhals and legumes of various kinds. Most common dhals are toor, urad (especially to make cakes and snacks), gram and mung (most frequently used). Dhal is sometimes cooked with vegetables called “dalma.”
- Fish is an integral part of the diet. In fact it is considered auspicious, and no Odia and Bengali function can do without fish. The fish is prepared in innumerable ways - steamed or braised, stewed with greens or other vegetables and with sauces that are mustard based. Fish curry cooked with mustard and garlic paste is very popular. There is a preference for Hilsa fish followed by Bass, Mullet, Rohu and Katla (all are fresh water fishes). The delicious Dahi Macch is prepared with fried fish dipped in gravy made of curd.
- Mutton, chicken, and eggs, along with seafood are also used. The coastline offers an abundant variety of shrimps, lobsters, and crabs that are relished in a variety of cooking styles and often spiced up.
- Consumption of lamb and pork are not very common in Eastern India.
- Vegetables are consumed in different forms: stir-fried, sautéed, bhartha (pureed or minced vegetables), or curried with a paste of garlic, ginger, and onion. Fresh vegetables are often

seasoned with light spices (Panch phoran or Panch Phutana). Often vegetables are cooked with fish, mutton, and chicken, especially in the curry form.

- Fruits are consumed fresh, mostly as after dinner desserts. These include watermelon, mango, lichees, apples, oranges, guavas, papayas, and a variety of plantains, and bananas.
- Tea is the most popular drink and is usually served with milk and sugar. Use of coffee is rare in the average households. Other popular drinks include coconut milk (from the young coconut, mostly a popular street-side drink), Lassi, a delicious iced curd drink, and Nimbu paani (lemon squash).
- Ghee is served on top of cooked rice to enhance flavor.
- Water is served with meals. For most traditional meals, people sit down on the floor on a mat and eat with their fingers.
- Coconut - is abundantly available and mostly used in the cooking (curries, dalma, sweets, chutneys) etc.

### Sweets

People of Odisha and West Bengal are sweet lovers, and have always been known for their particular weakness for sweets. It is rare to see meals completed without sweets. The choice of sweets for Odia and Bengali meals are unlimited. From the ubiquitous mishti doi and rossogolla, to the rarer pithey and pulli, the choice is boundless. Certain sweets are made on special events. Use of *chhana* (reduced milk) for making sweets is honed to perfection. *Rasgolla* and innumerable varieties of *sandesh* are available today. Besides these the tradition of homemade *pitha*, and sweets made of rice powder, sweet potato, *kheer*, coconut and gur is still common.



**Meal Pattern for the Traditional Odia/Bengali Client with Type 2 Diabetes**

<b>Time</b>	<b>Typical</b>	<b>Modified</b>
	Calories : 3127 Carbohydrate : 445 grams (56%) Protein : 141 grams (18%) Fat : 87 grams (25%)	Calories : 1852 Carbohydrate : 270 grams (58%) Protein : 98 grams (21%) Fat : 39 grams (19%)
<b>Breakfast</b> (7:30 AM)	<ul style="list-style-type: none"> <li>▪ 1 cup tea with whole milk and sugar</li> <li>▪ 1 cup chuda (puffed rice) upama</li> </ul>	<ul style="list-style-type: none"> <li>▪ 1 cup tea with skim milk (or 1% fat milk) and with no sugar (preferable).</li> <li>▪ 2 slices of whole wheat roti/ bread toast.</li> <li>▪ 2 table spoon of chutney</li> <li>▪ 2 tsp margarine</li> </ul>
<b>Snack</b> (10:30 AM)		<ul style="list-style-type: none"> <li>▪ 3 graham crackers</li> </ul>
<b>Lunch</b> (12:00 noon)	<ul style="list-style-type: none"> <li>▪ 3 cups of cooked rice</li> <li>▪ 2 oz of meat or fish</li> <li>▪ 1 cup of dhal</li> <li>▪ 1 cup of stir-fried vegetables</li> <li>▪ 2 table spoon of tomato/dhania chutney</li> <li>▪ ghee, pickles</li> </ul>	<ul style="list-style-type: none"> <li>▪ 1 ½ cups of cooked brown rice</li> <li>▪ ½ cup of dhal</li> <li>▪ 1 cup of stir-fried vegetables</li> <li>▪ 2 oz of fish (low fat) or meat (white, lean)</li> <li>▪ 1 cup low fat yogurt</li> <li>▪ 2 table spoon of tomato or dhania chutney (fresh)</li> </ul>
<b>Afternoon tea and snacks</b> (3:30 PM)	<ul style="list-style-type: none"> <li>▪ 2 cups of Mudhi (puffed rice) and mixture (fried nuts and legumes)</li> </ul>	<ul style="list-style-type: none"> <li>▪ 1 fresh fruit</li> </ul>
<b>Dinner</b> (7:00 PM)	<ul style="list-style-type: none"> <li>▪ 3 cups of cooked rice</li> <li>▪ 1 cup of dhal</li> <li>▪ 3 oz of meat or fish</li> <li>▪ 1 cup of stir-fried vegetables</li> <li>▪ 1 cup of curry (mixed vegetable and chickpeas).</li> <li>▪ pickles</li> </ul>	<ul style="list-style-type: none"> <li>▪ ½ cup cooked brown rice</li> <li>▪ 1 roti</li> <li>▪ 1 cup stir-fried vegetables</li> <li>▪ 2 oz of chicken or fish</li> <li>▪ 1 cup raw salad</li> </ul>
<b>Snack</b> (9:00 PM)		<ul style="list-style-type: none"> <li>▪ 1 cup of skim milk</li> </ul>

Some Examples of Healthy and Not so Healthy Foods:

Healthy Foods (use often)	Not so healthy foods (use less often)
<b>Starches</b>	
Roti	Parata fried with oil
Plain brown/basmati rice (cooked)	Pulao or fried rice w/ >1 tsp oil
Roasted mudhi or chuda (puffed rice)	Chuda upama with oil and vegetables
<b>Meat or meat alternatives</b>	
Dhal (mung, toor, or masoor)	Dhal with lots of oil or ghee
Baked Fish or Chicken	Fried chicken or fish
Pan-fried fish w/masala (cooked with oil and spices)	Fried fish in tomato gravy
<b>Vegetable dishes</b>	
Stir-fried vegetables	Vegetable curry w/ lots of oil and spices
Dalma (mixed Vegetable w/ dal)	Dalma with coconut and ghee
<b>Dairy</b>	
Yogurt and buttermilk made w/ skim milk or 2% milk	Yogurt and buttermilk w/ whole
Raita made with low-fat milk	Raita with fried boondi
Rasgolla and other steamed desserts	Desserts made with whole milk and or fried
<b>Fruit dishes</b>	
Plain fresh fruit	Fruit salad with jaggery & nuts

### Weekend and Party Planning

Food plays an important role in social gatherings of Oriyas and Bengalis. Festivals and weekends are the time when people indulge in rich and high calorie food, alcoholic beverages, and soft drinks. Plan ahead and adjust your food intake for the whole day to avoid a heavy overload of carbohydrates and fats and protein. Request your host or the Restaurant to prepare 1-2 special or modified dishes for you!

**Ranjita Misra, PhD, CHES, FMALRC is a Professor and Research Director, Center for the Study of Health Disparities, at Texas A&M University. She is also a member of the Intercollegiate Faculty of Nutrition at TAMU and a member of the Public Health Committee of AAPI. Contact information (979) 845-8726 or ranjitamisra@gmail.com**

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# Chapter 6

## South Indian Cuisine

Nirmala Ramasubramanian, MS, RD, CDE

South Indian cuisine refers to foods from 4 states, namely Tamil Nadu, Karnataka, Andhra Pradesh and Kerala; also included is Pondichery, which is a union territory. Variations in food practices along with language, culture, heritage and customs are very apparent among the 4 states. There are innumerable area-based specialty foods. For example, Pondichery cuisine is a blend of different cultures, including Tamil Nadu, Kerala and Andhra Pradesh while it also reflects the French influence. However, one may be able to find some common features.

In general, South Indian meals include one or more of the following in varied forms:

- Rice, white or parboiled. Since rice is the staple food of South India it is incorporated in various ways.
- Dhals or legumes of various kinds. Most common dhals are toor, urad, Bengal-gram and mung. The 2 staples, namely rice and different dhals are used in a variety of ways- pounded, ground, fermented, boiled, sautéed and so on. e.g. Idli, Dosa etc.
- Most commonly used animal protein foods are fish, chicken, lamb, mutton and eggs for non-vegetarians
- Vegetables, both green and starchy, are generally stir-fried or roasted to crispness (curry or porial) and/or served wet including dhals and coconut (koottu)
- Fruits are usually consumed fresh or as juices
- Desserts are generally made from reduced milk and white sugar (payasam or kheer), jaggery or

brown sugar-based cooked rice and lentils (sweet pongal, appam, adirasam, jilebi), and other sweetmeats, using clarified butter, nuts and spices like cardamom (Kesari, Halwa etc).

- Ghee or clarified butter is served with rice as a flavor enhancer. Sesame, peanut and vegetable oils are generally used in cooking
- Salt served separately on the plate for optional use
- Pickles and pappads (crispy wafers) are often used as side dishes
- Water served with meals
- Hot beverages such as "milky" coffee or tea with sugar
- The most commonly used **spices** are coriander, asafetida, cumin seeds, fenugreek, ginger, pepper (red, green, and black), turmeric, saffron, cardamom and various combinations of these used as curry powders and dessert enhancers.

Shredded coconut, coconut oil, coconut milk, fried plantain chips and fish are more common in Kerala and Pondicherry, whereas spicier foods are popular in Andhra, including pickles and chutneys. Cereal-lentil preparations using oil or clarified butter are more common in Karnataka and Tamil Nadu.

Acculturation of Indians in America includes the selection of American or other ethnic foods as main meals or snacks especially by younger generation. e.g. Sandwiches, pizza, pasta etc. Additionally foods from other regions of India are commonly used by South Indians, e.g. puris, samosas, chapathis, etc.

**Meal Pattern for the Traditional South Indian Client with Diabetes Type 2**

Meal	Typical	Modified
	Total Calories : 3585 CHO : 525 gm (59%) Protein : 128 gm (14%) Fat : 107 gm (27%)	Total Calories : 1905 CHO : 269 gm (55%) Protein : 88 gm (18%) Fat : 58 gm (27%)
<b>Breakfast</b> 7:30 A.M.	<ul style="list-style-type: none"> <li>▪ 1 cup coffee with whole milk</li> <li>▪ 3 Idlis or</li> <li>▪ 1 plate of Upuma</li> <li>▪ 2 tbsp. of coconut chutney</li> </ul>	<ul style="list-style-type: none"> <li>▪ 1 cup of coffee with ½ cup fat free or 1% milk</li> <li>▪ 2 Slices of whole wheat or multi grain toast</li> <li>▪ 2 tsp. of Margarine</li> </ul> OR <ul style="list-style-type: none"> <li>▪ 2 small Idlis OR</li> <li>▪ 1 cup of cracked wheat upuma</li> <li>▪ with 2 Tbsp. of tomato /veg or dhal chutney</li> </ul>
<b>Snack</b> 10:30 A.M.	None	<ul style="list-style-type: none"> <li>▪ 1 Fresh fruit (a small apple)</li> <li>▪ 8 oz. diluted buttermilk (½ cup lowfat yogurt and ½ cup water)</li> </ul>
<b>Lunch</b> 12:30 P.M.	<ul style="list-style-type: none"> <li>▪ 3 cups of White rice</li> <li>▪ 1 cup Sambhar</li> <li>▪ 1 cup Rasam</li> <li>▪ 1 cup green plantain curry</li> <li>▪ 1 cup mixed veg. koottu</li> <li>▪ 1 cup curds/whole milk yogurt</li> <li>▪ 1 or 2 fried papadums or potato chips</li> <li>▪ 2 tsp ghee,</li> <li>▪ Pickles</li> </ul>	<ul style="list-style-type: none"> <li>▪ 1 ½ cups of Brown rice OR</li> <li>▪ 2 small rotis with ½ cup of brown rice</li> <li>▪ 1 cup Sambhar or dhal</li> <li>▪ 1 Cup Rasam</li> <li>▪ 1 cup green beans curry</li> <li>▪ Shredded Carrot Salad with lemon juice</li> <li>▪ ½ cup fat free yogurt</li> <li>▪ 1 small roasted pappad/appalam</li> <li>▪ 2 tsp oil in cooking</li> </ul>
<b>Afternoon coffee</b> 4 P.M.	<ul style="list-style-type: none"> <li>▪ 2 murukkus/chaklis (pretzel like fried)</li> <li>▪ Coffee with whole milk</li> </ul>	<ul style="list-style-type: none"> <li>▪ ½ cup dry cereal mix (made with puffed rice, puffed wheat and ~6 peanuts or ~4 cashews)</li> <li>▪ 1 Cup coffee with fat free milk</li> </ul>

<b>Dinner</b> 7:30 P.M.	<ul style="list-style-type: none"> <li>▪ 3 cups of cooked white rice</li> <li>▪ 3 oz. of fish, chicken, or lamb (Non vegetarians)</li> <li>▪ 1 cup sambhar or dhal based vegetables</li> <li>▪ 1 cup fried vegetables such as Potato or Bhendi</li> <li>▪ 1 cup whole milk yogurt</li> <li>▪ Pickles/pappads etc</li> </ul>	<ul style="list-style-type: none"> <li>▪ 1 cup cooked brown rice or cracked wheat</li> <li>▪ 3 oz fish or white meat chicken (Non vegetarians) OR</li> <li>▪ 1 cup whole gram dhal or chick peas sundal</li> <li>▪ 1 cup spinach curry (dry or wet)</li> <li>▪ 1 cup Raita with grated cucumber (½ cup low fat yogurt and ½ cup cucumber)</li> <li>▪ 2 tsp oil in cooking</li> </ul>
<b>Snack</b> 9:30 P.M.	<ul style="list-style-type: none"> <li>▪ 1 fresh fruit</li> <li>▪ 1 cup ice cream</li> </ul>	<ul style="list-style-type: none"> <li>▪ 1 Kiwi or small orange</li> <li>▪ 4 walnuts or 12 peanuts</li> </ul>

Healthy Foods (use often)	Not-so heart healthy (use less often)
<b>Starches</b>	<b>Starches</b>
<ul style="list-style-type: none"> <li>▪ Idli - steamed, low fat</li> <li>▪ Doas cooked with minimum oil</li> <li>▪ Uppuma made with cracked wheat or Quinoa or Pohe</li> </ul>	<ul style="list-style-type: none"> <li>▪ Idlis topped with a lot of oil</li> <li>▪ Dosa roasts using extra oil or butter</li> <li>▪ Uppuma with liberal amount of oil or ghee</li> </ul>
<b>Meat or meat alternatives</b>	<b>Meat or meat alternatives</b>
<ul style="list-style-type: none"> <li>▪ Dhal or kootu or Sprouted mung dhal</li> <li>▪ Dhal Adais w/ controlled oil and veg. added</li> <li>▪ Chicken Tikka</li> <li>▪ Pan-fried fish w/masala</li> </ul>	<ul style="list-style-type: none"> <li>▪ Dhal with excess ghee or oil</li> <li>▪ Dhal Adais with excess oil</li> <li>▪ Fried chicken</li> <li>▪ Fried fish in coconut sauce</li> </ul>
<b>Vegetable dishes</b>	<b>Vegetable dishes</b>
<ul style="list-style-type: none"> <li>▪ Stir-fried green vegetables such as cabbage curry/pallya</li> <li>▪ Mixed Vegetable kootu with Minimal coconut</li> </ul>	<ul style="list-style-type: none"> <li>▪ Fried Potato curry with excess oil!</li> <li>▪ Aviyal with a lot of coconut,</li> <li>▪ Potato/Plantain</li> </ul>
<b>Dairy</b>	<b>Dairy</b>
<ul style="list-style-type: none"> <li>▪ Buttermilk made w/ skim or low fat milk</li> <li>▪ Pal kootu or Majjiga pulusu w/low-fat curds</li> </ul>	<ul style="list-style-type: none"> <li>▪ Buttermilk w/ whole or 2% milk</li> <li>▪ Pacchadi (Raita) w/fried boondi</li> </ul>
<b>Fruit dishes</b>	<b>Fruit dishes</b>
<ul style="list-style-type: none"> <li>▪ Plain fresh fruits</li> <li>▪ Plain Jack fruit or mango</li> </ul>	<ul style="list-style-type: none"> <li>• Banana Panchamritham w/jaggery, ghee &amp; nuts</li> <li>• Chhakkapradaman w/nuts/fruits</li> </ul>

### Tips for changes

1. **Use brown rice instead of white rice.** The increase in fiber content will improve glycemic control. There is a general misconception that diabetics must avoid all rice, which is not necessary. **Avoiding excess portions** is the key.
2. Instead of using rice as the main staple grain, include **a variety of grains such as cracked wheat, oats, barley, quinoa, ragi and other millets.**
3. **Avoid washing rice several times** before cooking or cooking in excess water and draining.
4. Keep in mind that the recommended portions are for cooked products wherever applicable. e.g.1 Serving of dhal= 2 Tbsp of uncooked dhal  
1 Serving of rice = 3 Tbsp. of uncooked rice.  
This is important because the finished product may vary greatly in quantity and consistency!
5. **Try to cook with minimum amount of oil.** Preferred oils are olive, canola or peanut oils as they are high in monounsaturated oils.
6. While using potato, green plantain or other starchy vegetables, remember to count them as carbohydrates and cut down on rice eaten at the same meal. Smarter thing would be to **select green vegetables more often than starchy ones.**
7. Use green vegetables more freely and learn to cook them in small amounts of oil. **Salads are good with every meal.** Simple lemon and vinegar dressings may be freely used.
8. **Switch over to fat free, skim or 1% milk** instead of whole milk. This will reduce the saturated fat and calorie content of the diet.
9. **Avoid fried snack foods as much as possible;** learn to cook with recipes requiring dry roasting, baking etc. Remember people with diabetes are more susceptible to high cholesterol in their blood, as well as heart disease.
10. **Use lean cuts of animal proteins** (meats/poultry) and **use appropriate portion sizes.** Avoid using

more than 3 eggs per week. Egg whites are okay.

11. Vegetarians may increase and improve the quantity and quality of protein by incorporating **soy curd (tofu), soy flour, skim milk powder, nut butters and if allowed, egg whites.**
12. Pickles, chutneys, pappadums, etc. are very high in sodium. People with hypertension must take note that table salt, baking powder, and baking soda are sources of sodium and therefore must be used carefully.
13. **Desserts must be restricted to allowed quantities of fresh fruits.** Artificially sweetened low fat desserts or desserts using allowed foods with minimal amount of real sugar may be used with prudence.
14. **Drink plenty of water throughout the day, at least 6 to 8 cups a day.**
15. **Learn to read the nutrition labels** on food packages.

### Weekend and Party Planning

South Indians are very similar to other immigrants in trying to entertain and relax on the weekends. Food becomes an important part of the social gatherings. Quite often, festivals and holidays are celebrated on the weekends with friends. Pot-luck dinners are very popular. Men may indulge in alcoholic beverages while women generally limit themselves to sodas and juices.

**Party meals** consist of several varieties of rice, vadas, and bondas as well as fried and creamy vegetables prepared with liberal quantities of oil and coconut, nuts and dry fruits. Fried home made rice/lentil snacks, roasted nuts, potato chips, rice and lentil wafers, and chutneys make the feasts mouth watering and of course calorie-laden! Special desserts of various kinds appropriate to the festival/celebration are also brought in, in addition to cakes and doughnuts to satisfy the palate of the younger generation.

### **Party Tips**

1. Try to eat a sensible, *small* snack, like a bowl of soup, before leaving the house, to curb overindulgence.
2. With appetizers, use a small plate, fill it with healthy snacks, and limit the number of fried snacks.
3. Drink seltzer with lime/lemon for a splash of flavor, without the calories of juice, soda or alcohol.
4. When dinner items are served, *survey all the offerings first*, and envision your plate accordingly: ½ salads and green vegetables, ¼ rice/breads, ¼ chicken, fish or other protein.
5. Take the time to enjoy your food and refrain from going back for seconds.
6. When choosing desserts, be very sensible. Choose fruit.

### ***Hosting the party or festival***

1. **When hosting**, offer fresh, colorful veggies (baby carrots, cucumber strips, bell pepper strips, cauliflower florets) in lieu of, or in

addition to fried snacks. Serve the veggies with coriander chutney or a low-fat yogurt-based dip.

2. Try to offer 1 or 2 vegetable dishes, lightly stir-fried or steamed, and a healthy salad. Ensure that your guests have good, healthy options.

Think, plan, cook healthy, eat and enjoy!

**Nirmala Ramasubramanian, MS, RD, CDN, CDE** has extensive experience in acute care dietetics and clinical research of diabetes. She is presently employed at North Shore University Hospital /Healthcare System in Manhasset, New York. Contact information 718-969-1827 or [nirmala1@gmail.com](mailto:nirmala1@gmail.com)

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# Chapter 7

## Maharashtrian Cuisine

Keya Deshpande Karwankar, MS

Maharashtrian cuisine boasts of being wholesome, nutritious and intricate. You would find one ingredient like dal could be made in three or four elaborately different ways. The cuisine encompasses a variety of food preparations, from the coconut based coastal cuisine to an interior distinctive cuisine known as *Varadi* cuisine. Although, all the them share a lot of commonalities:

### Grain Group

Examples of one serving size would be: 1 chapati, ½ cup of cooked rice, ½ cup of *pohe*.

- As in most of the other states of India, rice is the staple food grain in Maharashtra too. A maharashtrian meal cannot be complete without chapati or *bhakri* (jawar or bajra roti) with *toop* (clarified butter-ghee).
- Breakfast comprises of preparation like *pohe* (seasoned beaten rice).
- Desserts or sweets like *sheera* (sweet semolina), *kheer*, *shankarpaali* (made out of refined flour and sugar) are common. And special occasions call for *puris* (deep fried) or one of the most liked maharashtrian dish called *puranpoli* (chapati with a lentil and jaggery filling).

### Vegetable Group

Example of a serving size would be ½ cup of cooked vegetables and 1 cup of raw vegetables, like spinach.

- There is an enormous variety of vegetables in the regular diet made in both gravy and dry style. Curries like *bharlivangi*, *bharlibhendi* are made on special occasions.

- The vegetables are more or less steamed and lightly seasoned so as to retain their nutritional value. Deep frying and roasting is not a common practice. And few of the common dishes are *bharit* (lightly cooked or raw vegetables in yogurt), *paale bhaji* (leafy vegetables), *paatal bhaji* (spinach or fenugreek with lentil and peanuts), *zunka* (made with gram flour and vegetable).
- Salad or *koshimbir* is a very important part of every meal. It is made out of a variety of raw vegetables like cucumber, tomatoes, onions, spinach. And this is garnished with coriander and peanut powder, and is lightly seasoned with *phodni* (hot oil with spices).

### Fruits Group

Example of a serving size would be a tennis ball size of apple, a medium banana, ½ cup of *aam ras*.

- Fruits are consumed both whole and pureed. *Aam ras* (mango puree) and *shikran* (banana in milk) are commonly consumed. And in summer *pana* (raw mango juice) is relished.
- (Pureed ,sweetened fruits carry concentrated calories and adjustments have to be made accordingly to avoid a high sugar load at any one meal).

### Milk/Yogurt Group

- Example of a serving size would be 1 cup of milk, ½ cup of yogurt, 1 cup of butter milk.
- Milk is used in the preparation of tea and many of the sweet preparations like *kheer*.



- Yogurt is a very vital ingredient in preparing *koshimbir*, *bhajis* (vegetables), *chutney* (spicy accompaniment made out of a variety of foods) and it is also used to make a famous maharashtrian dessert, *shrikhand* (Curd whey with sugar).
- *Taak* (buttermilk) and yogurt is also eaten with rice. Buttermilk is also used to make *taaka chi kadi* (buttermilk with gram flour).

### Meat, Poultry, Fish, Dry beans/Lentils, Eggs and Nuts Group

- An example would be ½ a cup of *dal*, ½ cup of chicken or mutton curry.
- *Dal* (Toor dal) or *umpti* (sweet and sour toor dal) are a must with rice for a maharashtrian. A variety of lentils like masoor, chana, toor, mung are used in the preparation of *varan* (dal).
- *Mooga chi dal* (mung dal), *mooga chi usal*, *vatana chi usal* (dried peas) are also the delicacies. Sprouted mung dal is used widely and is prepared in many different ways.
- Peanuts are used in a lot of preparations like *chutney*, *chikki* (peanut and jaggery), and it is used as garnish for many of the *koshimbiri* and *bhaji*.
- The people in the coastal parts of maharashtra

enjoy a variety of fish like *bombil* (bombay duck), which is batter fried, *bangda* (mackerel) is curried with red chilles, ginger and *tirphal* (a spice). *Paaplet* (pomphret) is usually barbecued or shallow fried.

- Lamb and chicken is mainly consumed in the interior part of maharashtra.
- Foods in this group are excellent sources of proteins, B vitamins, iron and zinc. Lentils/ *dals* are also a good source of fiber.

### Food preparations during *upaas* (fast)

Fasting time actually turns out like a feast, as maharashtrians prepare numerous dishes garnished with peanuts. *Sabudana chi khichadi*, *sabudana wada* (a deep fried snack) *bagaar* (a type of rice), *batata cha khees* (grated potato-seasoned) are the hot favorites during fasting.

Jaggery, tamarind and *kala masala* (is a special blend of spices) is added in most of the vegetables and lentils which makes the foods piquant.

Although maharashtrians usually tend to stick to the traditional cooking style, maharashtrians in America have incorporated a tad of western cooking, making it a nice blend of both.

### One Day Menu Plan for a Traditional Maharashtrian Client with Type II Diabetes

Meal	Typical	Modified
	Calories : 3402 Carbohydrate : 462 grams (54%) Protein : 114 grams (13%) Fat : 130 grams (33%)	Calories : 2048 Carbohydrate : 326 grams (64%) Protein : 102 grams (19%) Fat : 40 grams (17%)
<b>Breakfast:</b> 8.30 AM	<ul style="list-style-type: none"> <li>▪ 1 cup <i>chaha</i> (tea) with whole milk and sugar.</li> <li>▪ 1 bowl <i>pohe</i>.</li> <li>▪ 1 banana</li> </ul>	<ul style="list-style-type: none"> <li>▪ 1 cup <i>chaha</i> made out of skimmed milk and sweetener.</li> <li>▪ 1 cup of <i>pohe</i>.</li> <li>▪ 1 apple.</li> </ul>

*Maharashtrian Cuisine*

Meal	Typical	Modified
<b>Lunch:</b> <b>12.30 PM</b>	<ul style="list-style-type: none"> <li>▪ 2 cups white rice</li> <li>▪ 2 chappatis with oil or ghee</li> <li>▪ 1 cup <i>umpti</i> (toor dal with jaggery and tamarind)</li> <li>▪ ½ cup <i>batata chi bhaji</i> (Potato curry).</li> <li>▪ ¼ cup cucumber <i>koshimbir</i> (salad) with peanut powder and <i>phodni</i>.</li> <li>▪ 1 cup yogurt or buttermilk.</li> </ul>	<ul style="list-style-type: none"> <li>▪ ½ cup brown rice</li> <li>▪ 2 phulkas without oil or ghee</li> <li>▪ 1 cup <i>varan</i> (toor dal without jaggery).</li> <li>▪ ½ cup string beans <i>bhaji</i> or 1 cup <i>methi chi bhaji</i> (fenugreek curry).</li> <li>▪ ¼ cup cucumber <i>koshimbir</i> without peanut powder or <i>phodni</i>.</li> <li>▪ ½ cup non-fat yogurt or buttermilk.</li> </ul>
<b>Snack:</b> <b>4.00 PM</b>	<ul style="list-style-type: none"> <li>▪ 1 cup <i>chaha</i> (tea) with whole milk and sugar.</li> </ul>	<ul style="list-style-type: none"> <li>▪ 1 cup <i>chaha</i> made out of skimmed milk and sweetener.</li> <li>▪ 2 whole wheat crackers.</li> <li>▪ ½ cup watermelon.</li> </ul>
<b>Dinner:</b> <b>8.00 PM</b>	<ul style="list-style-type: none"> <li>▪ 1 cup white rice.</li> <li>▪ 2 chappatis with oil or ghee.</li> <li>▪ 1 cup <i>mooga chi usal</i> (mung dal) with fresh grated coconut.</li> <li>▪ 1 serving of fried fish.</li> <li>▪ 1 cup <i>kokum kadi</i> (kokum fruit in coconut milk)</li> </ul>	<ul style="list-style-type: none"> <li>▪ ½ cup brown rice.</li> <li>▪ 2 phulkas without oil or ghee.</li> <li>▪ 1 cup <i>mooga chi usal</i> (mung dal) without coconut.</li> <li>▪ 1 serving barbecued fish (with very little oil).</li> <li>▪ 1 cup kokum juice without coconut milk or ¼ cup <i>kokum kadi</i> with coconut milk.</li> </ul>

### Weekend and Party Planning

Weekends are usually spent with friends and relatives and food becomes a major part of the good times. Presentation of food has a lot of importance for Maharashtrians. Party favorites include a different type of rice preparation like *vaangi bhaat* (brinjal rice), *tondli bhaat* (tindora rice). Fried snacks like *chewda* (made out of beaten rice), *chakli* (deep fried, made out of gram flour) are often served. *Shrikhand* (curd whey and sugar), *aamrakhand*, or *kheer* are served as desserts.

**Keya Deshpande Karwankar, MS** is Senior Manager of Operations and Quality at Apollo Health and Lifestyle Limited in Hyderabad India. Contact information [keyakarwankar@gmail.com](mailto:keyakarwankar@gmail.com).

Macronutrient calculations were done by **Anwar Al-Mansoor, MPH** Nutrition candidate, Hunter College, New York. Contact information [anwar.almansoor@gmail.com](mailto:anwar.almansoor@gmail.com).

# Chapter 8

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## Gujarati Cuisine

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Rita Batheja, MS, RD, CDN

Gujarati Cuisine is primarily vegetarian with Jain and Buddhist influences. Gujarat can be divided into 4 regions and due to the different climatic conditions; there are slight variations in eating habits and preparation of food. The four regions are South and North Gujarat, Kathiavad and Kutch. Gujaratis have a sweet tooth and therefore add jiggery and/or sugar to every dish from vegetables to chutneys including dal and pickles. Jains do not eat onion and garlic. Rotli is prepared soft like a petal, Phulkas to a crunchy bone dry texture called Khakhras. Khakhras are used for breakfast or as a snack or while travelling.

### South Gujarat

In **Surat**, vegetable dishes like Undhiyu and Paunkh are very popular. Suratis add green chilies to add life to the food. They love sweets like Nankhatais and Gharis which they buy from local bakeries and shops. No expensive ingredients are used or elaborate preparations are made yet food in its simplicity tastes exotically different.

### North Gujarat

Food is non-spicy and oil is used sparingly. It is popular for its traditional Gujarati Thali, which has its origins in this city. It consists of Farsan (appetizer) like Khaman Dhokla and Khandvi (chickpea flour), one variety of Dal or Kadhi (prepared from yogurt), hot fluffy Puri or Rotli, couple of vegetables, sprouted beans, Raita (yogurt), Doodhpak

(sweetened milk with saffron and nuts), Papad, Chutney and Pickle.

### Kathiawad

Kathiawadis love Dhebras (made from wheat flour, yogurt, spinach, green chilies, sugar and salt) that they eat with Chhunda (sweet, sour and hot mango pickle). They also use Methia Masala (dry powder made from fenugreek seeds, chili powder and salt) to sprinkle on vegetables. They also use red chili powder to make spicy cuisine and eat lot of peanuts and til (sesame seeds) - Peanut Chiki (made with gud) tastes delicious.

### Kutch

Kutchi cuisine is very simple. They mainly use rice and pulses. Main dish is Khichdi (mixture of rice and mung dal) and Kadhi (curry made of yogurt) or Bajra no rotlo (made from Millet) with homemade pure ghee (butter) and gud (jaggery), guvarnu shak (vegetable) and Chhash (buttermilk). Kutchhis also eat Dudhi Muthia (made from Snake Squash and flour) and some common dishes like Dhokla (a salty steamed cake), Doodhpak or Shrikhand (sweet made of Whole Milk Yogurt, Cardamom, Slivered Pistachio/ Almonds, Saffron and Charodi) with hot fluffy puris.

In short, Gujarati Cuisine's concentration is on fried snacks and the use of plenty of ghee, oil, sugar and jaggery. Many Gujaratis do not eat green vegetables frequently and hardly eat fruits.

*Gujarati Cuisine*

Meal	Typical	Modified
	Calories : 4244 Carbohydrate : 606 grams (57%) Protein : 99 grams (9%) Fat : 161 grams (35%)	Calories : 1531 Carbohydrate : 247 grams (65%) Protein : 70 grams (18%) Fat : 37 grams (22%)
<b>Breakfast</b> 7:30 am	<ul style="list-style-type: none"> <li>▪ 1 cup Chai (Tea) with whole milk</li> <li>▪ 4 tsp regular sugar</li> <li>▪ 2 -3 Theplas</li> </ul>	<ul style="list-style-type: none"> <li>▪ 1 cup Chai with 1% milk</li> <li>▪ 1 package - no calorie sweetner</li> <li>▪ 1 Thepla or 2 plain Khakhras</li> <li>▪ ¾ cup 1% Milk</li> <li>▪ 1 cup Water</li> </ul>
<b>Snack</b> 10:30 am	<ul style="list-style-type: none"> <li>▪ 30 Salted Peanuts</li> </ul>	<ul style="list-style-type: none"> <li>▪ 10 unsalted roasted peanuts</li> <li>▪ 1 cup Water</li> </ul>
<b>Lunch</b> 12:30 pm	<ul style="list-style-type: none"> <li>▪ 4 Rotlis with 4 teaspoons ghee</li> <li>▪ ½ cup Toor Dal with sugar</li> <li>▪ 1 cup Black eye peas with sugar</li> <li>▪ 1 cup Bhat (rice)</li> <li>▪ ¼ cup Yam</li> <li>▪ ¼ cup Dahi (yogurt)</li> <li>▪ 1 cup regular soda</li> <li>▪ 1 tsp vegetable oil in cooking</li> </ul>	<ul style="list-style-type: none"> <li>▪ ½ cup Salad with lemon and vinegar</li> <li>▪ 1 Sooki Rotli - no ghee</li> <li>▪ ½ cup Toor Dhal no sugar</li> <li>▪ ¼ cup Black eye peas no sugar</li> <li>▪ ¼ cup Bhinda nu Shak (Okra veg.)</li> <li>▪ ¼ cup Bhat (cooked rice)</li> <li>▪ ½ cup Dahi (1% milk)</li> <li>▪ 1 small apple</li> <li>▪ 1 cup Water</li> <li>▪ ½ tsp olive oil in cooking</li> </ul>
<b>Tea Time</b> 3:30 pm	<ul style="list-style-type: none"> <li>▪ 1-2 cup Chai with 1 oz whole milk</li> <li>▪ 4 tsp regular sugar</li> <li>▪ 1 cup Fried Chevda</li> <li>▪ 1 ½" x 1 ½" Mohanthal (sweet)</li> </ul>	<ul style="list-style-type: none"> <li>▪ 1 cup Chai with 1oz 1% milk</li> <li>▪ 1 pkg - no calorie sweetener</li> <li>▪ ¾ cup homemade high fiber high protein or high fiber cereal Chevda</li> <li>▪ 1 cup Water</li> </ul>
<b>Dinner</b> 8 pm	<ul style="list-style-type: none"> <li>▪ 1 Fried Papad</li> <li>▪ 3 Parathas with 6 tsp oil</li> <li>▪ 1 cup Batata nu shak (Potato veg.)</li> <li>▪ 1 cup Chhash (Buttermilk)</li> <li>▪ 2 1" Mug-ni dal ni Kachori with Amali-ni chutney</li> <li>▪ 2 Tbsp Chhunda (mango pickle)</li> </ul>	<ul style="list-style-type: none"> <li>▪ ½ cup Salad with Balsamic vinegar</li> <li>▪ 1 Paratha with ½ tsp oil- use non-Stick pan.</li> <li>▪ ½ cup Palak with 1% lowfat Paneer or Extra firm silken Tofu</li> <li>▪ ½ cup 1% Dahi (yogurt)</li> <li>▪ 1 medium Orange</li> <li>▪ 1 cup Water</li> </ul>
<b>Snack</b> 9 pm	<ul style="list-style-type: none"> <li>▪ 6 Khajur (Dried Dates)</li> <li>▪ 1 oz bag Potato chips</li> <li>▪ 1 cup water</li> </ul>	<ul style="list-style-type: none"> <li>▪ 3 Khajur (Dried Dates)</li> <li>▪ 6 Almonds</li> <li>▪ 1 cup Water</li> </ul>

### Weekend and Party Plannig

Gujaratis love weekend gatherings and partying, which starts from Friday evening till Sunday evening. Mostly men drink few pegs of scotch with snacks such as kachoris, samosas, vegetable cutlets, cashew rolls and varieties of Bhajias. Problems in this area that call for your attention before you go to that party or the restaurant: Remember PORTION CONTROL and move more eat less that makes perfect sense. Plan your day's meal ahead of time so that importance is given to healthful preparations, the kind and amount of fat used and the importance of avoiding carbohydrate or fat loading,

### Party meal consists of

Fried Papad, Puries, Shrikhand (rich sweet made from whole milk yogurt, sugar, Cardamom, Slivered Pistachio/Almond, Saffron and Charodi ) Valor nu shak (pulses or legumes), Undhiyu (mixed vegetables, potato, flour ball - muthias swimming in oil), Vegetable Pulao, Kadhi (made with buttermilk), Raita, Kataki ( cubed mango pickle).

It is recommended that to go easy on appetizers,

offer variety of sliced vegetables with Humus (Mediterranean dish) as an example. Humus is made from ground chick peas, sesame paste (Til-high in calcium), green chillies, ginger and lemon (easy recipe - can keep in the refrigerator).

Consider serving Handva, Dhokla and Idli instead of fried items. Example 1" square Dhokla = 1 Rotli, ½ cup Pauva = 1 Rotli, got the idea! That is called carbohydrate counting. Dairy, vegetables, fruit and food from the grains group all contain carbohydrate. Consumers with Diabetes need to learn about serving sizes.

### Modified Party Meal

- ½ cup lettuce and tomato salad
- 1 teaspoon fat free salad dressing (Walden farm brand tastes good)
- 1 3" Puri
- ⅓ cup Undhiyu
- ¼ cup Kadhi
- ¼ cup Vegetable Pulao
- 1 small oven baked Samosa
- 1 oz. Shrikhand
- ¼ cup fresh fruit salad

Eat Frequently	Eat Infrequently
<b>Dairy</b>	
<ul style="list-style-type: none"> <li>▪ 1% or 2% Milk</li> <li>▪ Dahi made from 1% or 2% Milk</li> </ul>	<ul style="list-style-type: none"> <li>▪ Regular Milk</li> <li>▪ Dahi made from regular Milk</li> </ul>
<b>Meat or Meat Alternatives</b>	
<ul style="list-style-type: none"> <li>▪ Black eye peas with no calorie sweetener</li> <li>▪ Roasted Papad</li> </ul>	<ul style="list-style-type: none"> <li>▪ Black eye peas with sugar</li> <li>▪ Fried Papad</li> </ul>
<b>Vegetable</b>	
<ul style="list-style-type: none"> <li>▪ Palak vegetable with 1% low fat paneer or</li> <li>▪ Extra firm Silken tofu</li> <li>▪ Bhinda (Okra) Nu Shak</li> </ul>	<ul style="list-style-type: none"> <li>▪ Batata Nu Shak</li> <li>▪ Mashed Yam</li> </ul>
<b>Fruit</b>	
<ul style="list-style-type: none"> <li>▪ Grapes</li> <li>▪ Fruit Shrikhand made with 1% Dahi</li> </ul>	<ul style="list-style-type: none"> <li>▪ Mohanthal</li> <li>▪ Shrikhand made from Whole Milk Dahi</li> </ul>
<b>Grain</b>	
<ul style="list-style-type: none"> <li>▪ Home made high fiber cereal (Chevda)</li> <li>▪ Paratha with 1 tsp olive oil - use non stick pan</li> </ul>	<ul style="list-style-type: none"> <li>▪ Fried Chevda</li> <li>▪ Paratha with 1 tablespoon cotton seed oil</li> </ul>

**Rita (Shah) Batheja, MS RD CDN is an Internationally Renowned Registered Dietitian and Integrative Nutritionist in Private Practice in Long Island, New York and the Founder of the Indian American Dietetic Association. Contact information 516-868-0605 or krbat1@juno.com.**

**Macronutrient calculations were done by Anwar Al-Mansoor, MPH Nutrition candidate, Hunter College, New York. Contact information anwar.almansoor@gmail.com.**

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# Chapter 9

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## North Indian Cuisine

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Madhu Gadia, MS, RD, CDE

North Indian cuisine typically represents foods of Punjab, Haryana, Delhi, Jammu and Kashmir, Himachal Pradesh, Uttar Pradesh, Uttarakhand, Rajasthan, Bihar, Jharkhand, Chhattisgarh, and Madhya Pradesh. Basically, all the states north and west of Maharashtra are often clumped together in this generalization. Each state has its own specialties but it is the similarities that classify the food of this region. North Indian food is often called “Punjabi food”. North Indian food is the most popular food in restaurants and therefore it is synonymous with Indian food throughout the world.

Wheat is the staple food of this region. “Basmati” rice is grown in the northern plains and is often the rice of choice for pulaos and biryanis. Variety of dals or beans such as garbanzo, kidney, urad as well as moong and toor dal are used. Milk, butter and ghee are used extensively. Chicken and mutton are the most popular meats eaten in this region. Most of the cooking is done on the stovetop using the roasting and frying method.

Punjabis and refugees from West Punjab (which is now in Pakistan), came and settled in Punjab and Delhi. They were very enterprising people and had a style and food of their own. They popularized tandoori food (that gets its name from the *tandoor* clay oven in which the food is cooked) in this region. Punjabis opened restaurants at every corner and thus tandoori food was born. They developed a ‘formula’ that worked and Punjabi food became very popular. Today most Indian restaurants around the world serve tandoori dishes and typically Punjabi food.

North Indian food is a combination of simple to very elegant vegetarian and non-vegetarian fare. A simple vegetarian meal may consist of moong dal, subji and phulka (thin whole wheat roti). The food is seasoned with asafoetida, cumin, turmeric, coriander powder and garam masala. The garam masala is often referred to as a north Indian spice blend. Onion and garlic may or may not be used. Then there are the non-vegetarian favorites like chicken and lamb dishes heavily seasoned with spices, onion, ginger and garlic. Foods like stuffed paratha, saag and makki-ki-roti (corn roti), chole and bhature, kofta, rogan josh, tandoori chicken, biryanies and pulao are very popular in this cuisine. Variety of desserts such as barfi, laddu, and gulab jamun are extremely popular in this region.

North Indian food is often described as “rich”. The food is often fried, and a fair amount of ghee, butter and nuts may be used. The food is seasoned heavily with onion, ginger, garlic and spices like cardamom, cinnamon and cloves that give the food a “rich” color and flavor.

Nutritionally speaking, north Indian meals with plenty of whole grains, green leafy vegetables, and beans are high in complex carbohydrates, fiber, vitamins and minerals. The overall fat and saturated fat content of traditional meals may be high due to extensive use of milk, butter, ghee and oil. The meal can be easily modified in overall fat content by using small amount of unsaturated oil to season the food. In order to reduce saturated fat, substitute low fat or fat free milk wherever possible and use butter and ghee sparingly.

North Indian food can be easily incorporated into a healthy lifestyle. If you have diabetes, it is important to watch the carbohydrate content of each meal. Plan balanced meals of roti, dal, meat (if non-vegetarian) non-starchy vegetables and salad. A typical ‘thaali’ meal (pre-portioned out foods in small cups served on a large plate or ‘thaali’) with balance of nutrients, flavors and textures may work well with diabetes and a healthy diet. The amount of carbohydrate in each meal should be individualized. Portion size of foods is important to determine the actual carbohydrate intake. Remember within reason most foods can fit into a diet for a person managing his/her diabetes. See sample menu below.

**Sample Menu**

A sample menu of a typical vegetarian (and non-vegetarian meal) and a modified meal plan is given below. A typical meal as mentioned earlier is high in carbohydrate and fat. By some modification in the amount of oil and ghee used, substituting low fat and low

carbohydrate vegetables as well as cutting down on portions will help in cutting down in carbohydrate and fat content and therefore the total calorie intake. The recommendations for a well-balanced meal plan are carbohydrate 50 to 70 percent, protein 10 to 20 percent, and fat 30 to 35 percent. Consult a dietitian for an individualized meal plan.

**Table below identifies foods to eat often and foods to eat less frequently**

Food Groups	Eat More Often	Avoid or Eat less often
Starches	<ul style="list-style-type: none"> <li>▪ Roti, phulka, chapatti</li> <li>▪ Brown basmati rice</li> <li>▪ Potatoes-prepared with minimal oil</li> </ul>	<ul style="list-style-type: none"> <li>▪ Paratha, puri, kachori, naan</li> <li>▪ Pulao, Biriyani</li> <li>▪ Fried potatoes</li> </ul>
Fruits	<ul style="list-style-type: none"> <li>▪ All fresh fruits</li> <li>▪ Monitor portion size of fruit</li> <li>▪ Light canned fruit</li> </ul>	<ul style="list-style-type: none"> <li>▪ Regular canned fruit</li> </ul>
Vegetables	<ul style="list-style-type: none"> <li>▪ All vegetables cooked with minimal oil</li> </ul>	<ul style="list-style-type: none"> <li>▪ Creamed or fried vegetables</li> </ul>
Meat And Meat Alternatives	<ul style="list-style-type: none"> <li>▪ Dal cooked in minimal oil</li> <li>▪ Chicken (without skin) and fish cooked in minimal oil</li> <li>▪ Eat lean lamb, goat, pork or beef less often and in small quantity</li> <li>▪ Low fat cheese</li> <li>▪ Low fat paneer</li> <li>▪ Part skim Ricotta cheese</li> <li>▪ Tofu</li> </ul>	<ul style="list-style-type: none"> <li>▪ Fried or creamed dal</li> <li>▪ Chicken, fish, or red meat cooked with cream</li> <li>▪ High fat cuts of lamb, goat, pork or beef</li> <li>▪ Regular Cheese</li> <li>▪ Regular paneer</li> <li>▪ Regular Ricotta Cheese</li> </ul>
Dairy	<ul style="list-style-type: none"> <li>▪ Skim milk, fat free yogurt and buttermilk</li> </ul>	<ul style="list-style-type: none"> <li>▪ 2% or whole milk and its products</li> </ul>
Fats	<ul style="list-style-type: none"> <li>▪ Canola, vegetable, or olive oil</li> <li>▪ Nuts such as almonds, peanuts, walnuts</li> <li>▪ Seeds such as sunflower seeds</li> </ul>	<ul style="list-style-type: none"> <li>▪ Butter, ghee, cream, half- and-half Coconut, coconut oil, coconut milk</li> </ul>



### Menu Plan for a Traditional North Indian with Type II Diabetes

Meal	Typical Meal	Modified Meal
	Calories : 2600 Carbohydrate : 350 grams (55%) Protein : 80 grams (12%) Fat : 100 grams (33%)	Calories : 1600 Carbohydrate : 220 grams (55%) Protein : 70 grams (17%) Fat : 50 grams (28%)
Breakfast	<ul style="list-style-type: none"> <li>▪ 1 cup chai (Tea) / whole milk</li> <li>▪ 3 teaspoons sugar</li> <li>▪ 1 potato paratha</li> <li>1 tsp Pickle</li> </ul>	<ul style="list-style-type: none"> <li>▪ 1 cup chai / skim milk</li> <li>▪ no calorie sweetener</li> <li>▪ 2 whole wheat toast</li> <li>▪ 1 teaspoon butter</li> <li>▪ 1 cup skim milk</li> </ul>
Lunch	<ul style="list-style-type: none"> <li>▪ 2 roti with 1 teaspoon ghee</li> <li>▪ 1 cup rajmah (or chicken curry)</li> <li>▪ ½ cup spinach and potato subji</li> <li>▪ ½ cup onion and cucumber salad</li> <li>▪ 1 roasted papad</li> </ul>	<ul style="list-style-type: none"> <li>▪ 2 roti-no ghee</li> <li>▪ 1 cup low fat rajmah (or low fat chicken curry)</li> <li>▪ ½ cup spinach subji</li> <li>▪ ½ cup onion and cucumber salad</li> <li>▪ 1 roasted papad</li> </ul>
Tea Time	<ul style="list-style-type: none"> <li>▪ 1 cup chai / whole milk</li> <li>▪ 3 teaspoons sugar</li> <li>▪ ¼ cup namkeen (fried snack)</li> <li>▪ 1 laddu (sweet)</li> </ul>	<ul style="list-style-type: none"> <li>▪ 1 cup chai / skim milk</li> <li>▪ no calorie sweetener</li> <li>▪ 1 oz (30grams) mixed nuts</li> <li>▪ 1 Banana</li> </ul>
Dinner	<ul style="list-style-type: none"> <li>▪ 2 parathas</li> <li>▪ 1 cup chole (1 cup Kheema)</li> <li>▪ 1 cup potato and pea subji</li> <li>▪ ½ cup dahi (whole milk yogurt)</li> </ul>	<ul style="list-style-type: none"> <li>▪ 2 roti-no ghee</li> <li>▪ ½ cup chole (or ½ cup low fat kheema)</li> <li>▪ 1 cup cauliflower subji</li> <li>▪ ½ cup dahi (fat free)</li> </ul>
Snack	<ul style="list-style-type: none"> <li>▪ 1 cup Kheer</li> </ul>	<ul style="list-style-type: none"> <li>▪ 1 orange</li> <li>▪ 1 cup skim milk</li> </ul>

### Weekends and Parties

There is often a distinct difference in our eating between weekdays and weekends. Weekdays we are bound by time and schedules and it is easier to control the types and amounts of foods we eat. People will often say they do so well Monday to Friday implying that they make good choices in their meal selection. But come weekends (starting Friday night) we lose all restraints in our food selection. Indians love to party, as it is our way of socializing and connecting with our culture. Socializing is

associated with special occasion foods of puri, chole, pakore, and not to mention kheer and halwa (generally high-fat foods). Portion control is a good tool to use here. If you are the host, plan your parties to balance meals and incorporate some lower fat foods like vegetable trays as appetizers and use less fat in your dishes. If you are the guest at a party and everything you see is high in fat and calories watch your portion sizes, enjoy the company and thank the hosts for a wonderful evening. You will be much happier on Monday morning!

<p><i>Typical Party Menu</i></p>	<p><i>Serving Suggestions</i> (Watch portions and total carbohydrate intake to avoid elevated blood sugar after the meal, and enjoy the party and company.)</p>
<ul style="list-style-type: none"> <li>▪ Samose or pakore with chutney</li> <li>▪ Puri</li> <li>▪ Chole</li> <li>▪ Chicken curry (non-vegetarian)</li> <li>▪ Potato Pea subji</li> <li>▪ Cauliflower with potato subji</li> <li>▪ Kofte</li> <li>▪ Onion, cucumber, radish salad</li> <li>▪ Boondi Raita</li> <li>▪ Matar Pulao</li> <li>▪ Chai</li> <li>▪ Gulab Jamun</li> </ul>	<ul style="list-style-type: none"> <li>▪ 1 Samosa</li> <li>▪ 1 Puri</li> <li>▪ ½ cup Chole</li> <li>▪ ½ cup Chicken curry (non-vegetarian)</li> <li>▪ ½ cup Cauliflower subji, avoid the potatoes</li> <li>▪ 1 kofta</li> <li>▪ 1 cup onion, cucumber, radish salad</li> <li>▪ ¼ cup Raita</li> <li>▪ Chai</li> <li>▪ (Skip pulao and dessert)</li> </ul>

Madhu Gadia, MS, RD, CDE (Registered Dietitian and a Certified Diabetes Educator) is an author of *New Indian Home Cooking* (Penguin Group 2000) and *The Indian Vegan Kitchen* (Penguin Group 2009). She is a Wellness Director for Compass Group and teaches the art of Indian cooking around the country. Contact information [www.cuisineofindia.com](http://www.cuisineofindia.com).

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# Chapter 10

## Nepali Cuisine

Suraj Mathema, MS, RD, CDE

Many people of Nepalese origin following Nepali dietary practices live in India. Nepali cuisine, in part, has been influenced by cooking practices in North India and Tibet. But, there are many typical indigenous dishes such as *gundruk*, *lapsi achar*, *qwa gasa* (*Newari dish*), *sukti* etc. Also, the sub-ethnic groups have their own variations of dishes.

In general, Nepali meals include one or more of the following in varied forms:

- Rice is most popular in grains, then wheat. Maize is not as popular as rice and wheat. Even less popular are millet, barley and buckwheat
- *Dals* or legumes of various kinds. Most common *dals* are toor, urad, gram and mung. The two staples, namely rice and different *dals* are used in a variety of ways such as pounded, ground, boiled, sautéed and so on.
- Most commonly used animal protein foods are, chicken, goat, water buffalo and eggs for non-vegetarians
- Green vegetables are stir-fried, while most other vegetables are seasoned with light spices and prepared in curry form.
- Fruits are usually consumed fresh or as juices. *Lapsi* is typically eaten as *achar*.
- Commonly consumed sweets are: *Kheer*, *Gulaab Jaamun*, *Halwa*, *Mahi* (by product of milk after the butter had been churned out, often sweetened before consumption), *Rasogolla*, *Rasmalai*, *Laddoos* etc.
- Hot tea is most popular drink for all seasons. It is served with milk and sugar.
- Ghee or clarified butter is often served with rice as flavor enhancer. Mustard oil is mostly used for cooking.
- Water served with meals
- The most commonly used spices are coriander, cumin, ginger, turmeric. And others used in typical dishes are *timur* (szechwan pepper – used in *aloo achar*, *qwa gasa* etc.), *jimbu* ( used in urad *dal*)

### Heart Healthy Meal Pattern for the Traditional Nepali Client

Time	Typical	Modified
	Calories : 2800 Carbohydrate : 336 grams (48%) Protein : 140 grams (20%) Fat : 99.5 grams (32%)	Calories : 1900 Carbohydrate : 261 grams (55%) Protein : 119 grams (25%) Fat : 42 grams (20%)
<b>Breakfast</b> (7:00 AM)	<ul style="list-style-type: none"> <li>▪ 1 cup tea with whole milk and sugar</li> <li>▪ 2 slice bread</li> <li>▪ 1 egg</li> </ul>	<ul style="list-style-type: none"> <li>▪ 1 cup tea with skim milk (or 1% fat milk) and with no sugar (preferable).</li> <li>▪ 2 slices of whole-wheat bread/ toast.</li> <li>▪ 2 tsp margarine</li> </ul>

<b>Snack/Lunch<sup>1</sup></b> (9:30 AM)		<ul style="list-style-type: none"> <li>▪ 1 fruit, 3 graham crackers</li> </ul>
<b>Lunch/Snack</b> (1:00 PM)	<ul style="list-style-type: none"> <li>▪ 2 cups of rice<sup>2</sup></li> <li>▪ 2 oz of meat/chicken</li> <li>▪ 1 cup of <i>dal</i></li> <li>▪ 1 cup of stir-fried vegetables</li> <li>▪ 2 table spoon of tomato/coriander chutney</li> <li>▪ Ghee, pickles</li> </ul>	<ul style="list-style-type: none"> <li>▪ <math>\frac{2}{3}</math> cup of brown rice</li> <li>▪ <math>\frac{1}{2}</math></li> <li>▪ 1 cup of <i>dal</i></li> <li>▪ 1 cup of vegetable curry</li> <li>▪ 2 oz of Chicken (skinless) or meat (white, lean)</li> <li>▪ 1 cup low fat yogurt</li> <li>▪ 2 table spoon of tomato or coriander chutney (fresh)</li> </ul>
<b>Afternoon tea and snacks</b> (4:00 PM)	<ul style="list-style-type: none"> <li>▪ 1 cup of Chiura (beaten rice)</li> <li>▪ 1 cup fried vegetable</li> <li>▪ 1 cup tea</li> </ul>	<ul style="list-style-type: none"> <li>▪ <math>\frac{1}{2}</math> cup Chiura or</li> <li>▪ 3 saltine-type crackers or</li> <li>▪ 10 unsalted roasted peanuts and</li> <li>▪ 1 cup tea with low fat milk without sugar.</li> </ul>
<b>Dinner</b> (7:00 PM)	<ul style="list-style-type: none"> <li>▪ 2 cups of rice</li> <li>▪ 1 cup of <i>dal</i></li> <li>▪ 3 oz of meat or Chicken</li> <li>▪ 1 cup of stir-fried vegetables</li> <li>▪ 1 cup of curry (mixed vegetable and chickpeas).</li> <li>▪ Pickles</li> </ul>	<ul style="list-style-type: none"> <li>▪ <math>\frac{2}{3}</math> cup brown rice</li> <li>▪ 1 cup stir-fried vegetables</li> <li>▪ 1 cup mixed vegetables with chickpeas.</li> <li>▪ 1 cup dal or</li> <li>▪ 3 oz of skinless chicken or Fish</li> <li>▪ <math>\frac{1}{2}</math> cup salad</li> </ul>
<b>Snack</b> (9:00 PM)		<ul style="list-style-type: none"> <li>▪ 1 fresh fruit</li> <li>▪ 1 cup of skim milk</li> </ul>

Many Nepalese following traditional meal time eat Lunch at about 9:00 AM and snack at 1:00 PM

<sup>2</sup> Rice **refers to cooked rice wherever** mentioned in this article

### Tips for changes

1. Encourage brown rice instead of white rice.
2. Instead of using only rice, select from a variety of grains, such as cracked wheat, oats, and barley.
3. Avoid washing rice several times before cooking or cooking in excess water and draining. Doing this may lose valuable vitamins and enriched iron.
4. Keep in mind that the recommended portions are for the cooked product where applicable
5. Try to cook with minimum amount of oil, preferably olive oil or canola oil which are high in monounsaturated fats.
6. While using potato, or other starchy vegetables, remember to proportionately cut down on the amount of rice eaten. Smarter thing to do is selecting a green vegetable more often than starchy ones.

Some examples of Heart-healthy and Not So Heart-healthy foods:

Food Groups	Heart-healthy	Not so Heart-healthy (use less often)
Starches	Plain rice, plain <i>roti</i>	Fried rice, fried potato
Meat and Meat Alternatives	<i>Dal</i> , skinless chicken	Fried <i>Dal</i> , chicken with skin
Dairy	Skim milk, low fat yogurt	Regular milk, yogurt with extra cream
Vegetables	All vegetables with no more than one teaspoon of oil per ½ cup cooked vegetable	Fried vegetables, creamed vegetables
Fat/oils	Margarine, canola oil	Butter, coconut oil

7. Use green vegetables more freely and learn to cook them in a small amount of oil. Salads are good with any meal. Simple lemon or vinegar dressings may be freely used.
8. Switch over to skim or 1% low fat milk instead of whole milk. This will reduce the saturated fat content in the diet.
9. Avoid frying of snack foods; learn to look for recipes, requiring dry roasting, baking etc. Remember people with diabetes are more susceptible to *high cholesterol* in their blood and heart disease. Practice low fat cooking methods, using non-stick pans.
10. Use only lean cuts of animal proteins and practice correct portion sizes. Avoid using more than 3 whole eggs/week. Egg whites are okay.
11. Pickles, *chutneys* etc are very high in sodium. *People with hypertension* must take note that table salt, baking powder, and baking soda are sources of sodium and therefore must be used carefully.
12. Desserts should be restricted to fresh fruits; artificially sweetened low fat desserts made from allowed foods may be used occasionally.
13. Drink plenty of water, at least 6 to 8 cups a day.

### Weekend and Party Planning

Food plays a major role during the weekends and the social gatherings. Nepalese tend to live in an extended family environment. As a result, members of the family constantly get in and out of the house at different times. Thus, food is constantly being prepared to ensure that nobody remains hungry including the guest that come unannounced, which is a common event. Most Nepalese prefer to eat home cooked meals. It is quite common for family members and guests to consume high caloric foods. High caloric fried snacks and desserts are commonly offered to guests. Refer to the Summary section on how to eat healthy.

**Suraj Mathema, MS, RD, CDN, MBA is a Registered and Certified Dietitian who has worked as Dietitian with geriatric and developmentally disabled population for more than sixteen years. He is currently working in New York City as a Consultant Dietitian for Nutrition Consulting Services. Contact information smathema1@yahoo.com**

*Nepali Cuisine*

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# Chapter 11

## Low Fat Cooking & How to Modify a Recipe

Nimesh Bhargava, MS, RD, CNSD, MBA

Diet related diseases like heart disease, obesity, cancer and diabetes greatly affect the quality of life. The need to manage these diseases with proper diet and a growing health-consciousness has brought awareness in people to explore new ways of cooking and eating. There are many sources to draw from including low-fat cookbooks and the latest sources are the numerous websites that offer low-fat recipes.

It is important to remember that while fats, 'ghee' or oils bring richness and taste to the food, they also contain twice the amount of calories as compared to carbohydrate or protein. Besides being a concentrated source of calories they are readily converted and stored as body fat. The type of fats and oils as well as amounts used will determine if a recipe is heart-healthy or not. Most of your favorite recipes can be easily changed to lower the fat, salt, and sugar content and increase fiber. This section of the book is devoted to tips on making your favorite recipes healthier.

### **Making your favorite recipes healthier**

With a little practice, you can turn any favorite recipe into a healthy dish.

Always ask yourself - "Can I reduce the amount of salt and ghee / oil?"

Always use a measuring cup or a measuring spoon. Never pour from a container or guess the amount of salt and oil. You may know the amount of oil or salt to be added in the recipe. With time the serving size increases if you do not measure the ingredients.

- Fats like ghee, butter, oil or even margarine can be cut by half to two thirds the amount in the recipes. Try cutting the amount by small amounts first then gradually increasing to half to two thirds the amount. To replace the loss of taste when ghee or oil is reduced, consider adding alternatives such as vegetable broth, vegetables, fruit juices, herbs, spices, skim milk or skim milk powder.
- Change the cooking recipe: Instead of frying, bake, boil, broil or steam the food item. This will significantly reduce the amount of fat you consume.
- Use nonstick cooking pots and pans. Coating baking pans with vegetable cooking spray rather than using ghee or oil.
- Sauté foods in water, wine, or fruit juice rather than oil or ghee.
- Removing or cutting down oils from curry, dal, sambar or rasam. If the recipe was cooked with too much oil, cool it after cooking. Then skim the excess fat with a tea spoon to remove the oil from the surface.

Use a plastic degreaser constructed like a pitcher with a spout that allows the liquid to be poured from the bottom instead of the top.

- Trimming fat from poultry, beef or pork: Remove the skin of the chicken or turkey. Trim visible fat from beef or pork before cooking.

*LowFat Cooking & How to Modify a Recipe*

- Reduce the amount of salt by adding spices and herbs. Below is the list of spices that goes well with Meat, Vegetables and Fruits:

Vegetables: Add lemon, ginger, vinegar, dry mango powder, anardana, black pepper, corriander dry or green leaves, sesame seeds, fennel seeds, basil, oregano, onion, garlic, turmeric, tamarind and tarragon

Fruits: Cinnamon, cloves, cardamom, vanilla, or mint

Fish, Poultry, Meat: Bay leaf, chives, dry mustard, lemon, garlic, onion sage, or basil

- Increase fiber by cooking brown rice instead of white rice, use whole wheat bread instead of white bread, do not sieve the flour before making the flat bread or “rotti” and leave skins on fruits or vegetables

The following table shows how you can substitute ingredients to make your recipe healthier;

Food Item	Substitute with
Cream	Evaporated Skim Milk
Whole Milk	Skim Milk or 1% Milk
1 cup ghee	¾ cup vegetable oil
½ cup ghee	⅓ cup vegetable oil
Regular cheese	Low fat cheese or skim milk cheese
Cream cheese	Light cream cheese
Butter	Margarine
Mayonnaise	Light mayonnaise or reduce calorie mayonnaise
Salad dressing	Reduced calorie, light or fat free salad dressing

Regular Gelatin	Sugar-free gelatin mix or fruit juice mixed with unflavored gelatin
1 Whole egg	¼ cup egg substitute 2 egg whites or 1 egg white 1 teaspoon vegetable oil
1 Ounce baking chocolate	3 tablespoons cocoa powder and 1 tablespoon vegetable oil
1 can condensed cream soup	Homemade white sauce (1 cup skim milk +2 tablespoons flour +2 tablespoons margarine)
Cream of celery soup	1 cup of white sauce+¼ cup celery
Cream of mushroom soup	1 cup white sauce+1 cup mushroom
Cream of chicken soup	1½ cups of white sauce +1 chicken bouillon cube
Fat in baked recipes	Use no more than 1-2 tablespoons of oil per cup of flour: increase liquid slightly to add extra moisture
Syrup packed canned fruit	Juice packed canned fruit
2 tablespoons flour (as thickener)	1 tablespoon cornstarch or arrow shoot
Sugar in baked recipes	Reduce the amount by ½ the original amount: use no more than ½ cup added sweetener (sugar, honey, molasses, etc) per cup of flour. Add vanilla extract, cinnamon, and nutmeg to increase sweetness. Use half the amount of sugar and replace the other half with apple sauce or well ripen mashed bananas



Baking Powder	Low sodium baking powder
Salt in recipes	Reduce amount or eliminate by using spices and herbs
Garlic, onion and celery salt	Use garlic, onion and celery powder

### Guide to Ingredients

Anise seed	: Ajwain or Carum
Asfoetida	: Hing
Aborigine	: Begun or baingan (eggplant)
Chapatti flour	: Atta
Bay leaf	: Tej patta
Bitter gourd	: Karela
Black pepper	: Kali mirch
Cardamom	: Elaichi
Red chilies	: Lal Mirch
Cinnamon	: Dalchini
Cloves	: Lavang
Coconut	: Nariyal
Coriander seeds	: Dhaniya
Cumin	: Jeera
Curry leaves	: Kari patta
Fennel	: Saunf
Fenugreek	: Methi
Garlic	: Lahsun
Ginger	: Adrak
Gram flour	: Besan or chickpea flour
Jaggery	: Gur
Mace	: Javitri
Mango powder	: Amchoor
Mint	: Hara pudeena
Mustard	: Sarson or Rai
Nutmeg	: Jaiphal
Onion Seeds	: Kalonji
Oregano seeds	: Ajwain
Parsley	: Ajmood ka patta
Paneer	: Indian cheese
Pomegranate seeds	: Anardana
Poppy seeds	: Khus khus or posta dana

Raisin	: Kismish
Red lentils	: Masoor dal
Saffron	: Kesar
Sesame seeds	: Til
Tamarind	: Imli
Toor Dhal	: Yellow split lentils
Turmeric	: Haldi
Vinegar	: Sirka
Yellow split peas	: Channa dal
Yogurt	: Dahi

### Sambar (Serves 4) (Original recipe)

- ½ c red lentils
- 1 tablespoon vegetable oil
- 1 tsp mustard seeds
- ½ tsp asafetida
- ½ tsp fenugreek seeds
- ½ tsp cumin seeds
- 1 dried red chili halved
- 2-3 curry leaves
- 2 green chili
- 1 cup mixed vegetables cut small pieces (onion, potato, radish, eggplant, zucchini, green bell pepper)
- 2 tbsp tamarind juice
- 1 cup water
- 1 tbsp sambar powder
- 1 tbsp chopped fresh coriander

Cook the lentils in boiling water for about 1 hour until tender then drain and set aside. Heat the oil and fry the mustard seeds, asafetida, fenugreek, and cumin seeds, red and green chili and curry leaves until the mustard seeds start crackling. Add the green chilies and vegetables and fry for 2 minutes. Add the tamarind juice, water, sambar powder, turmeric and salt, cover and simmer over a low heat until the vegetables are tender. Stir in the cooked lentils and simmer for 5 minutes. If the sambar needs to be thickened, blend the rice flour with the water, stir it into the pan and simmer for a few

minutes. Garnish with coriander and serve hot with rice.

### **Sambar (Modified recipe)**

- ½ c red lentils
- 1tsp mustard seeds
- ½ tsp asafetida
- ½ tsp fenugreek seeds
- ½ tsp cumin seeds
- 1 dried red chili halved
- 2-3 curry leaves
- 2 green chili
- 1 cup mixed vegetables cut small pieces (onion, potato, radish, Aborigine, zucchini, green bell pepper)
- 2tbsp tamarind juice
- 1½ cup water
- 1tbsp sambar powder
- 1 tbsp chopped fresh coriander

Cook the lentils in boiling water for about 1 hour until tender then drain and set aside. Roast mustard seeds, asafetida, fenugreek, and cumin seeds, red and green chili and curry leaves until the mustard seeds become brown in the heavy frying pan. Add the green chili and vegetables and add ½ cup of water and cook for 5 minutes. Add the tamarind juice, water, sambar powder, turmeric and salt, cover and simmer over a low heat until the vegetables are tender. Stir in the cooked lentils and simmer for 5 minutes. If sambar needs to be thickened, blend the rice flour with the water, stir it into the pan and simmer for a further few minutes. Garnish with coriander and serve hot with rice.

### **Soups Serving 4**

#### **Tomato soup with bread croutons (Original recipe)**

- 500 gyms ripe tomatoes
- 1 small onion
- 4 cups of water

- Oil for deep frying
- 2 slices bread
- Salt & pepper

Cut tomatoes and onion into small pieces and add water in a pan. Boil and cook for about 20 - 25 minutes. Puree the ingredients in a blender and then pass it through a sieve. Cut the bread slice in ½ inch squares. Heat the oil and fry the bread squares until golden brown. Serve the soup in a bowl, sprinkled it with croutons, salt and pepper to taste.

#### **Tomato soup (modified recipe)**

- 500 gyms ripe tomatoes
- 1 small onion
- 4 cups of water
- 1 tablespoon olive oil
- 2 slices bread
- Pepper
- Oregano & basil leaves

Cut tomatoes and onion into small pieces and add water in a pan. Boil and cook for about 20 - 25 minutes. Puree the ingredients in a blender and then pass it through a sieve. Brush olive oil on the bread slice. Cut the bread slice in ½ inch squares. Sprinkle oregano and basil leaves on the bread. Place bread squares in 350°F oven for 10-12 minutes until golden brown. Serve the soup in a bowl, sprinkled it with croutons, and pepper to taste.

### **Vegetables and Vegetarians Dishes**

#### **Palak Khadi Serving 4 (original recipe)**

- 2 cups plain yogurt
- ¼ cup gram flour
- ½ tsp ground red chili
- ½ tsp ground turmeric
- Salt
- 2 cups water
- ½ cup fresh palak boiled

- 2 table spoon ghee
- ½ tsp mustard seeds
- 2 red chilies
- ⅛ tsp asafetida

Heat ghee in a heavy based pan and fry mustard seeds until they start crackling. Add asafetida, red chilies, boiled palace, and then water. Mix yogurt and gram flour in a bowl. Pour it in the pan. Add salt, chili and turmeric. Bring to boil, stir occasionally. Reduce the heat to medium – low then simmer for 25 minutes. Serve khadi hot with plain rice or chappatis.

#### **Palak Khadi Serving 4 (modified recipe)**

- 2 cups fat free plain yogurt
- ¼ cup gram flour
- ½ tsp ground red chili
- ½ tsp ground turmeric
- Salt
- 2 cups water
- ½ cup fresh palak boiled
- 2 table spoon canola oil or vegetable oil
- ½ tsp mustard seeds
- 2 red chilies
- ⅛ tsp asafetida

Heat oil Heat oil in a heavy based pan and fry mustard seeds until they start crackling. Add asafetida, red chilies, boiled palak, and then water. Mix yogurt and gram flour in a bowl. Pour it in the pan. Add salt, chili and turmeric. Bring to boil, stir occasionally. Reduce the heat to medium – low then simmer for 25 minutes. Serve kadhi hot with plain rice or chappatis.

#### **Dal**

##### **Dal Makhani Serving 6 (original recipe)**

- 250 gm Urad dal (black gram)
- 100 gm red kidney beans

- 1 small onion grated
- 2 ripe tomatoes chopped
- 4 tablespoons ghee
- 1 tablespoon grated fresh ginger
- Salt
- 1 tsp garam masala
- 2 green chilies chopped
- ½ cup cream

Wash dal and beans thoroughly. Soak them overnight. Boil beans and dal in a pressure cooker with salt for 30 minutes or until tender. Mash some of the cooked dal with a spoon. In another saucepan, heat the ghee and fry ginger, chilies and onions for 10 minutes or until the onion is lightly browned. Then add tomatoes and cream. Cook for 10 minutes. Reserve 1 tablespoon of this mixture and stir the remainder into dal and beans. Add garam masala and salt. Garnish with the reserved onions and tomato mixture. Serve hot with rice or chappatis.

##### **Dal Makhani Serving 6 (modified recipe)**

- 250 gm Urad dal (black gram)
- 100 gm red kidney beans
- 1 small onion grated
- 2 ripe tomatoes chopped
- 2 tablespoons vegetable oil
- 1 tablespoon grated fresh ginger
- Salt
- 1 tsp garam masala
- 2 green chilies chopped
- ½ cup light cream

Wash dal and beans thoroughly. Soak them overnight. Boil beans and dal in a pressure cooker with salt for 30 minutes or until tender. Mash some of the cooked dal with a spoon. In another saucepan, heat the oil and sauté` ginger, chilies and onions for 10 minutes or until the onion are lightly browned. Then add tomatoes and cream. Cook for

10 minutes. Reserve 1 tablespoon of this mixture and stir the remainder into dal and beans. Add garam masala. Garnish with the reserved onions and tomato mixture. Serve hot with rice or chappatis.

### **Spiced Chick Peas Serving 4**

#### **(Original recipe)**

- 250 gm chick peas
- 650cc / 2 ½ cups water
- ½ tsp baking soda
- 4 table spoon ghee
- inch grated ginger
- 2 green chilies chopped
- 1 tsp garam masala
- 2 table spoon green mango powder
- ½ tsp red chili powder
- 2 tsp coriander powder
- Black salt to taste
- Coriander fresh chopped
- 1 onion chopped

Soak the chick peas overnight in the water with baking soda. Boil the chick peas in pressure cooker for 30 minutes until tender in low fire. Heat ghee in another pan and fry ginger and chilies add all ingredients simmer for 2-3 minutes. Add the chick peas and stir well. Cover and simmer gently for 10 minutes. Sprinkle with coriander and onion. Serve hot with rice or chappatis.

### **Spiced Chick Peas Serving 4**

#### **(Modified recipe)**

- 250 gm chick peas
- 650cc / 2 ½ cups water
- ½ tsp baking soda
- 2 table spoon canola oil or vegetable oil
- inch grated ginger
- 2 green chilies chopped
- 1 tsp garam masala

- 2 table spoon green mango powder
- ½ tsp red chili powder
- 2 tsp coriander powder
- Black salt to taste
- Coriander fresh chopped
- 1 onion chopped

Soak the chick peas overnight in the water with baking soda. Boil the chick peas in pressure cooker for 30 minutes until tender in low fire. Heat oil in another pan and fry ginger and chilies add all ingredients simmer for 2-3 minutes. Add the chick peas and stir well. Cover and simmer gently for 10 minutes. Sprinkle with coriander and onion. Serve hot with rice or chappatis.

### **Rice Dishes Serving (4)**

#### **Vegetable Pulao (original recipe)**

- 225 gm/ 1 cup basmati rice washed and soaked in cold water for 30 minutes
- ¼ cup ghee
- 1tsp cumin seeds
- 4 cloves
- 1 inch cinnamon stick
- 4 cardamom pods
- 2 bay leaves
- 1 red onion finely sliced
- 100 gm cauliflower, cut into 1 cm/½ inch slices
- 100 gm peas
- 2 medium carrots, cut 2.5 cm/ 1 inch slices
- 25 gm/ ⅓ cup raisin
- 1 medium potato, cut into 1 cm / ½ inch pieces
- 1 tsp garam masala ground
- ½ tea spoon ground red chili
- ½ tsp turmeric powder
- Salt to taste
- 500 cc / 2 cups water
- Coriander leaves.

Drain rice and leave it to drain in colander. Heat the ghee in a non stick pressure cooker over medium heat. Add the cumin seeds followed by cloves, cinnamon stick, cardamom and bay leaves. Let the spices sizzle for 15-20 seconds, then add the onion and fry until golden. Add the rice stir fry for 2-3 minutes; add all vegetables, garam masala, chili, turmeric powder, salt and raisin. Then pour water. Bring to boil for 1 minute then reduce the heat to low, cover and cook for 15 minutes or until tender. If there is any water left, dry off on a high heat. Garnish with washed coriander leaves. Serve with low fat plain yogurt.

### **Vegetable Pulao (modified recipe)**

- 225 gm/ 1 cup basmati rice washed and soaked in cold water for 30 minutes
- 1 table spoon canola or sunflower oil
- 1tsp cumin seeds
- 4 cloves
- 1 inch cinnamon stick
- 4 cardamom pods
- 2 bay leaves
- 1 red onion finely sliced
- 100 gm cauliflower, cut into 1 cm/<sup>1</sup>/<sub>2</sub> inch slices
- 100 gm peas
- 2 medium carrots, cut 2.5 cm/ 1 inch slices
- 25 gm/ <sup>1</sup>/<sub>3</sub> cup raisin
- 1 medium potato, cut into 1 cm / <sup>1</sup>/<sub>2</sub> inch pieces
- 1 tsp garam masala ground
- <sup>1</sup>/<sub>2</sub> tea spoon ground red chili
- <sup>1</sup>/<sub>2</sub> tsp turmeric powder
- Salt to taste
- 500 cc / 2 cups water
- Coriander leaves.

Wash rice and leave it to drain in colander. Heat the oil in a non stick pressure cooker over medium heat. Add the cumin seeds followed by cloves, cinnamon stick, cardamom and bay leaves. Let the spices sputter for 15-20 seconds, then add the onion and fry until golden. Add the rice & gently stir fry for

2-3 minutes, add all vegetables, garam masala, chili, turmeric powder, salt and raisin. Then pour water. Bring to boil for 1 minute then reduce the heat to low, cover and cook for 15 minutes or until tender. If there is any water left, dry off on a high heat. Garnish with washed coriander leaves. Serve with low fat plain yogurt.

### **Bread**

#### **Chappatis or Phulkas Serving 10 (original recipe)**

- 14 oz whole wheat flour plus more for dusting
- <sup>1</sup>/<sub>2</sub> tsp salt
- <sup>1</sup>/<sub>4</sub> cup / 4 table spoon ghee
- 8 <sup>1</sup>/<sub>2</sub> fluid oz lukewarm water

In a large bowl mix flour, salt and ghee then gradually add water and mix until dough is formed. Transfer the dough to a clean surface and knead it for 5-6 minutes. Cover the dough with a damp cotton cloth, leave to rest for 30 minutes. Divide the dough in half and cut each portion into 10 equal sized balls. Dust a cake of dough lightly with flour and roll out into a 6 inch disk. Keep remaining cakes covered with a damp cloth.

Preheat a heavy cast-iron griddle pan over medium high heat. Place a chapatti on it and cook until surface begins to dry. Turn it over and cook until the underside has brown patches. Turn it over again and press the chapatti with fish slice. The chapatti will puff up now. Cook until brown patches appear on the other side.

Wrap the chappatis in a sheet of aluminum foil lined with paper towels to keep hot until you finish cooking all the dough. Serve with any curry or vegetable dish.

#### **Chappatis or Phulkas Serving 10 (modified recipe)**

- 14 oz whole wheat flour plus more for dusting
- <sup>1</sup>/<sub>2</sub> tsp salt
- 2 tsp canola oil
- 8 <sup>1</sup>/<sub>2</sub> fluid oz lukewarm water

In a large bowl mix flour, salt and oil then gradually add water and mix until dough is formed. Transfer the dough to a clean surface and knead it for 5-6 minutes. Cover the dough with a damp cotton cloth, leave to rest for 30 minutes. Divide the dough in half and cut each portion into 10 equal sized balls. Dust a cake of dough lightly with flour and roll out into a 6 inch disk. Keep remaining cakes covered with a damp cloth.

Preheat a heavy cast-iron griddle pan over medium high heat. Place a chapatti on it and cook until surface begins to dry. Turn it over and cook until the underside has brown patches. Turn it over again and press the chapatti with fish slice. The chapatti will puff up now. Cook until brown patches appear on the other side.

Wrap the chappatis in a sheet of aluminum foil lined with paper towels to keep hot until you finish cooking all the dough. Serve with any curry or vegetable dish.

### **Cauliflower Maratha Serving 6 (original recipe)**

- 350 gm grated cauliflower
- 450 gm / 4 cups whole wheat flour
- 2 medium potatoes, boiled, peeled and mashed
- 2 chopped green chilies
- 1 cm/ ½ inch ginger roots, grated
- 1 tablespoon chopped fresh coriander
- 1 tsp garam masala
- ½ tsp red chili
- Salt to taste
- 1 tsp green mango powder (amchoor)
- 300 cc/ ½ pt. /1 ¼ cup water
- ½ cup ghee

Mix salt in cauliflower and let it stand for 10 minutes. Squeeze out the water. Mix cauliflower with potatoes, chilies, ginger, coriander, garam masala, red chili, mango powder. Mix the flour, 4 table spoon ghee, salt and water to make the dough.

Knead well, cover with a damp cotton cloth and leave to rest for 15 minutes. Divide the dough into 6 equal portions and roll out each one into a thick round. Spread a little ghee. Spoon the filling into the center of each one and fold over. Roll into balls. Dust a cake of dough lightly with flour and roll out into a 5 inch disk. Preheat a cast iron griddle over medium high heat. Place a paratha on it. Brush a little ghee and turn it again brush a little ghee and fry on both sides until lightly browned. Serve with plain low fat yogurt.

### **Cauliflower Paratha Serving 6(modified recipe)**

- 350 gm grated cauliflower
- 450 gm / 4 cups whole wheat flour
- 2 medium potatoes, boiled, peeled and mashed
- 2 chopped green chilies
- 1 cm/ ½ inch ginger roots, grated
- 1 tablespoon chopped fresh coriander
- 1 tsp garam masala
- ½ tsp red chili
- Salt to taste
- 1 tsp green mango powder (amchoor)
- 300 cc/ ½ pt. /1 ¼ cup water
- 4 table spoon canola oil or vegetable oil

Mix salt in cauliflower for 10 minutes. Squeeze out the water. Mix cauliflower with potatoes, chilies, ginger, coriander, garam masala, red chili, mango powder. Mix the flour, 1table spoon oil, salt and water to make the dough. Knead well, cover with a damp cotton cloth and leave to rest for 15 minutes. Divide the dough into 6 equal portions and roll out each one into a thick round. Spoon the filling into the center of each one and fold over. Roll into balls. Dust a cake of dough lightly with flour and roll out into a 5 inch disk. Preheat a cast iron griddle over medium high heat. Place a paratha on it. Brush a little oil and turn it again brush a little oil and fry on both sides until lightly browned. Serve with plain low fat yogurt.

## Snacks

### Rava Dhokla Serves 4 (Original recipe)

- 1 cup Rava
- 1 cup plain yogurt
- ½ tsp ground ginger
- 2 ground green chilies
- Salt to taste
- 1 tsp eno powder
- 1 tsp baking soda
- ½ tsp sugar
- ½ tsp ground turmeric
- 4 tablespoon ghee
- 1tsp mustard seeds
- ½ tsp citric acid or lime juice
- ½ cup water
- 2 green chilies chopped
- 12 curry patta leaves
- Fresh coriander leaves
- 2 tablespoon shredded coconut

Mix rava and yogurt, cover and keep for 30 minutes. Add ginger chili paste, salt, eno, baking soda, sugar and turmeric. Place a trivet in a large saucepan, fill with water to come just below the trivet and bring to boil. Pour the batter into a greased heat proof dish so that it is about 2 cm / ¾ inches deep. When water starts boiling, place the dish on the trivet, cover and cook for about 15 minutes until the dhokla is soft and spongy. After few seconds cut into 1 inch cubes. Heat ghee and fry mustard seeds until they start cracking. Add curry patta, pieces of chili, ½ cup water with lime juice and dokhla pieces and cook further for 1 minute. Serve in a bowl and garnish with coconut and coriander.

### Rava Dhokla Serves 4 (Modified recipe)

- 1 cup Rava
- 1 cup plain fat free yogurt
- ½ tsp ground ginger

- 2 ground green chilies
- Salt to taste
- 1 tsp eno powder
- 1 tsp baking soda
- ½ tsp sugar
- ½ tsp ground turmeric
- 2 tablespoon canola oil or vegetable oil
- 1tsp mustard seeds
- ½ tsp citric acid or lime juice
- ½ cup water
- 2 green chilies chopped
- 12 curry patta leaves
- Fresh coriander leaves
- 2 tablespoon shredded coconut

Mix rava and yogurt, cover and keep for 30 minutes. Add ginger chili paste, salt, eno, baking soda, sugar and turmeric. Place a trivet in a large saucepan, fill with water to come just below the trivet and bring to boil. Pour the batter into a greased heat proof dish so that it is about 2 cm / ¾ inches deep. When water starts boiling, place the dish on the trivet, cover and cook for about 15 minutes until the dhokla is soft and spongy. After few seconds, cut into 1 inch cubes. Heat oil and fry mustard seeds until they start cracking. Add curry patta, pieces of chili, ½ cup water with lime juice and dokhla pieces and cook further for 1 minute. Serve in a bowl and garnish with coconut and coriander.

### Moong Dal Dosa Serving 10 (Original recipe)

- 250 gm moon dal
- 4 green chilies chopped
- Fresh coriander chopped
- ½ medium size radish, scraped and grated
- Salt to taste
- ½ tsp red chili powder
- ⅓ tsp asafetida
- ½ cup ghee

Soak the dal in water for 6 hours. Grind coarsely then mix all the ingredients. Heat a heavy based pan and smear with ghee. Pour a ladleful of batter into the pan and spread to a 15 cm / 6 inch in circle. Pour a spoonful of ghee around the edges and cook for about 2 minutes. Until each side is golden color. Serve hot with chutney.

### **Moong Dal Dosa Serving 10 (Modified recipe)**

- 250 gm moong dal
- 4 green chilies chopped
- Fresh coriander chopped
- ½ medium size radish, scraped and grated
- Salt to taste
- ½ tsp red chili powder
- ¼ tsp asafetida
- 4 table spoon canola oil or vegetable oil

Soak the dal in water for 6 hours. Grind coarsely then mix all the ingredients. Heat a heavy based pan and smear with oil. Pour a ladle of batter into the pan and spread to a 15 cm / 6 inch in circle. Pour a spoon of oil around the edges and cook for about 2 minutes. Until each side is golden. Serve hot with chutney.

### **South Indian Coconut Chutney (Original recipe)**

- 50 gm grated coconut
- 1 cup plain yogurt
- 2 tsp ghee
- ½ tsp black mustard seeds
- 2 dried pieces of red chilies
- 1 inch of ginger
- A bunch of coriander
- 4-5 curry leaves
- Salt to taste

Mix coconut, Yogurt, coriander, ginger and salt in a blender. Heat ghee and fry the mustard seeds until seeds start cackling. Add red chilies, curry leaves, and stir in the coconut puree. Leave to cool.

### **South Indian Coconut Chutney (Modified recipe)**

- 50 gm grated coconut
- 1 cup plain fat free yogurt
- 2 tsp canola oil or vegetable oil
- ½ tsp black mustard seeds
- 2 dried pieces of red chilies
- 1 sq inch ginger
- A bunch of coriander leaves
- 1 tsp peanuts chopped
- 4-5 curry leaves
- Salt to taste

Mix coconut, yogurt, ginger, coriander and salt in a blender. Heat oil and fry the mustard seeds until seeds start cackling. Add chopped peanuts, red chilies, curry leaves, and stir in the coconut puree. Leave to cool.

### **Raitas**

#### **Cucumber Raita Serving 4 (original recipe)**

- 1 ½ cup plain yogurt
- 1 medium size cucumber
- ½ tsp black salt
- ½ tsp sugar
- 1 tsp ground roasted cumin (dry roast the cumin seeds for few seconds until golden color then grind.)

In a mixing bowl beat the yogurt with a wire whisk until smooth. Peel the cucumber and grate it. Squeeze out the excess water, mix yogurt, cucumber, salt and sugar. Sprinkle ground roasted cumin over the raita and serve.

#### **Cucumber Raita Serving 4 (modified recipe)**

- 1 ½ cup fat free yogurt
- 1 medium size cucumber
- ½ tsp black salt
- ½ tsp sugar



- 1 tsp ground roasted cumin (dry roast the cumin seeds for few seconds until golden color then grind.)

In a mixing bowl beat the yogurt with a wire whisk until smooth. Peel the cucumber and grate it. Squeeze out the excess water, mix yogurt, cucumber, salt and sugar. Sprinkle ground roasted cumin over the raita and serve.

**Nimesh Bhargava MS, RD, CNSD, MBA is a certified dietitian / nutritionist. He is Professor of Nutrition at Mount Saint Mary College, Newburgh, NY and Clinical Nutrition Manager at Somers Manor Nursing Home and Rehab Center, Somers, NY. Contact information nimesh777@yahoo.com**

# Chapter 12

## Choosing Healthy Snacks

Janaki Sengupta, MSc, RD, CDN, CDE

Nutritious snacks by delaying hunger and stabilizing blood sugars are an essential part of healthful meals. A recent trend is the availability of a wide variety of pre-packaged ready to eat snack items and the proliferation of Indian snack food restaurants in most metro areas in the US raising concerns about health outcomes. Savory and sweet snack foods have always been an indispensable part of the Indian cuisine. We are only too familiar with the Samosas, Kachoris, Vadas Chevda, Sev and a myriad of saltines (namkeens) not to mention the sweet “mithais” whipped out of the kitchen in a quick minute to be served and shared with a cup of tea or coffee with family, friends and even upon the arrival of unexpected guests.

Lack of traditional social support systems, adequate time for food preparation, the need to multi task and recently the ready availability of prepared and ready to eat snacks has left Asian Indian families with a variety of choices to choose from though not be necessarily healthful. Most vegetarian snack items are either made with cereals like rice, rice flour, semolina (sooji), refined wheat flour (maida) or whole wheat flour (atta) and legume flours like chick pea flour (besan), moong flour either in combination or alone. Some snack items may contain nuts, vegetables, spices, salt, oil, ghee and or sugar.

Based on the method of preparation snacks may be:

- Savory and salted snacks that is not deep-fried, for example: Uppuma, Pav Bhaji, and Dhokla

- Savory and salted items that are deep fat fried, for example: Samosa, Pakoras, Bhujias, and Murruku (deep-fried, crunchy spirals).
- Savory and salted items that contain a combination of deep-fried and raw ingredients, for example: Bhel puri, Dahi wada, Pani puri and Chaats.
- Sweet snacks prepared and preserved in a sugar medium, for example: Rasagolla, Pumpkin petha.
- Sweet snacks deep fat fried and preserved in sugar syrup, for example: Jilebi, Gulab Jamun.
- Non-vegetarian snacks baked, fried or grilled, for example: Chicken or mutton tikka, Egg pakoras, Fish fry, Shish kababs.

### Nutritional Values

Vegetarian cereal or legume based snack foods are high in carbohydrates. The fat and calorie content is high due to many of the items being either fried or containing oils, ghee or butter. While the salt content of the savory snacks may be high the sweet snacks tend to have even higher amounts of simple sugars. When served in combination a savory item with a sweet snack, - the mini meal may have the calories, fats and carbohydrates to be safely considered a meal replacement.

Non-vegetarian snack items though considerably lower in carbohydrates and higher in protein are nevertheless calorie rich due to the saturated fats they may contain.

## **Snack Patterns**

Traditionally savory snacks are consumed between meals while sweet snacks may be consumed after dinner. A social visit by friends or family prompts the inclusion of snacks with a cup of coffee or tea and may be sweet, savory or both, for not only the guests but the hosts as well. Snacks feature prominently in holiday and special occasion menus.

A predominant number of Asian Indians men and women are in the workforce; hence on weekdays the work force environment may permit the inclusion of a pre-lunch snack at work and a pre-dinner snack either before leaving the workplace or upon arrival at home. Lack of time for food and snack preparation may influence the inclusion of ready to eat snacks in the diets of this population. Store made, ready to eat snacks while being available on time to appease hunger may offer very little room for manipulation of the actual nutrients and calories ingested. These items tend to have high salt and fat content and may be unsuitable for individuals wishing to adhere to a healthful diet. Weekend snacking provides an opportunity to consume more traditional Indian snack items both at home and /or social gatherings. It is customary to serve snacks as appetizers in restaurants and homes.

The challenge of selecting and consuming healthy snacks though daunting is achievable for those seeking a healthful lifestyle contributing to glycemic control and weight management.

## **Tips for choosing healthful snacks**

### **Daily living**

- Plan your snack menu ahead. Foods least processed and closer to its natural state are the best choices
- Take snacks along with you to work.
- Add 'zing' to bland items with free foods.
- Select whole grains when feasible.
- Select baked or steamed snacks rather than fried snacks.

- Include fresh whole fruit and vegetables rather than fruit / vegetable juice for increased fiber.
- When using ready to use snacks read the nutrition facts panel and avoid high fat and high sodium items

## **Dining Out**

- Eat a healthy snack at home before you go out (a slice of low calorie whole wheat toast with coriander chutney\* or fresh whole fruit).
- Pick appetizers that are not fried – pick a light soup or fresh lemonade or tomato juice.
- Eat slowly relishing every bite.
- In social situations learn to say – no thanks to second servings.
- If eating in a restaurant – divide your entrée into 2 parts consume one part and take the other home for the next meal.
- Avoid 'All you can eat buffets.'

\* Available at most Indian grocers.

## **Some Healthful Snack Ideas**

1. Make your own chevda mix by mixing together 1cup whole wheat Chex, 1cup Puffed rice, 1 cup baked vegetable chips and ½cup of dry roasted unsalted peanuts – add your favorite spice powder – shake in a bag and divide into ⅓ cup portions and take it along for a snack at work.
2. Don't like those dry crackers – don't ever want to eat that Melba toast again? Try putting low calorie toppings like a teaspoon of tomato salsa, coriander or mint chutney for a tasty healthy snack. You could even make your own version of chutney/salsa sandwiches with lettuce /tomato and cucumber on whole wheat or multigrain bread for an office snack. If you are being treated for high blood pressure use toppings like salsa, coriander chutney pickles sparingly.
3. Before you stock your pantry with snacks – plan on items you will buy – choose Whole grain cereals, crackers and breads. Mint and

### *Choosing Healthy Snacks*

- coriander chutneys along with tomato salsa may be store bought. Include fresh carrots, cucumbers tomatoes and your favorite vegetables to be eaten raw in your snack list. Include unsalted nuts, seeds and whole fruits. Do not shop on an empty stomach.
4. If you plan on making snacks avoid deep fat frying or adding excessive amounts of oil, butter or ghee. Use low fat replacements when feasible.
  5. When making sweet snacks consider replacing part of the sugar with sugar substitutes like Equal or Splenda.
  6. Use salt and baking soda with caution in all your cookery.
  7. Read all product labels to learn the ingredients they contain.
  8. For a personalized snack/ food plan contact a Registered Dietitian “RD”.
  9. A snack is not a meal! – keep snack portions small.

#### **How Nutritious is your Favorite Snack?**

The table below will help you think about possible healthy snack items in different food groups. Remember portions will still have to be controlled and so should the use of oils, fats, sugar and salt.

<i>Healthy Snack (Enjoy all the time)</i>	<b>Not so healthy (Enjoy all the time – but within your day’s food plan)</b>
Plain Puffed rice (mamra, moori, pori.) Puffed cereals Whole wheat phulka or chappati	Bhel puri  Fried maida or whole-wheat puri
Roasted corn on the cob Boiled potato chaat or tikkia Baked vegetable chips Popcorn	Corn pakora Potato vada or fritters, samosa  Potato chips
Green gram or chickpea sundal or ghugni or channa masala. Fresh sprouted moong beans. Dhokla	Gram flour batter fried bajjia, vegetable fritters. Dal vada
Fruit Chaat Fresh whole fruit	Sweet fruit preserves chutneys. Fruit pies and cake. Chocolate covered fruit.
Grilled tandoori fish, chicken or lamb, kababs or tikka	Fish fry, Chicken nuggets, Meatballs, cutlets and meat croquettes.
Plain lassi	Sweet lassi or mango lassi
Roasted unsalted nuts, peanuts	Salted nuts peanuts mixed with fried chevda

### Practical Snack Modifications

Snacks	Healthful Modification	Comments
Sev/ mixed chevda bhel and nut mixes	Mix 1 part chevda mix with 3 parts puffed rice or puffed wheat. Add chopped up tomatoes, onion, coriander leaves, cucumber and a dash of lemon juice to puffed wheat /rice instead of chevda or fried mixes.	Reduce fats, carbohydrates and calories  Adding vegetables adds fiber and taste.
Samosa /Kachori/eggrolls	Prepare filling and use as stuffing in whole-wheat chappati, roll serve cut as cocktail wraps. Cherry tomatoes. Steamed cabbage leaves. Bell pepper halves Alternately form the filling into small patties lightly flour and roast on griddle	By not using the pastry shell and not frying you will cut on the calories and fat.
Sooji Uppuma	Prepare uppuma with cracked whole wheat	Adds fiber.
Fish fry and meat patties	Grill / bake or broil. Do not bread or batter	By not frying, the fat and calories are lower. By not breading or batter dipping you reduce the starch and calories.
Pappad	Roast in microwave or grill over open flame. Do not fry. Select less often if on a low salt diet.	By not frying you cut calories.
Sweet desserts Fruit juice /drinks, dried fruits, chocolate coated raisins or strawberries.	Replace with whole fresh fruit and vegetables	Cuts carbohydrates and calories. Adds fiber.
Portion sizes	Small and petite	Reduce calories, fats/ carbs
Chips / Dips	Replace with fresh vegetables like cucumber, bell peppers, carrots, tomatoes, and broccoli. Alternately use baked vegetable chips. Serve with coriander chutney, mint chutney or tomato salsa	Reduce calories, fats and carbohydrates. By including vegetables you reduce calorie intake and increase fiber.

## *Choosing Healthy Snacks*

### **Exchanges**

1 STARCH:

Sweet tamarind chutney 2tbsp 30gms. (Nirav)

### **Free Foods**

Coriander chutney 1tsp contains 100mg sodium (Nirav).

Salsa 2tbsp contains 450mg sodium (Taco bell).

**Janaki N.Sengupta, MSc, RD, CDN, CDE is a Registered Dietitian and Certified Diabetes Educator. She is the Nutrition Manager for the**

**Diabetes Disease Management Team (an expert group that provides diabetes self-management education to Guildnet members), a managed care network in New York City. Contact information 516-414-0143 or at janakisengupta@gmail.com**

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# Chapter 13

## Desserts of India

Sharmila Chatterjee, MSc, MS, RD, CDE

Desserts are often used to convey gratitude, affection, respect, joy and reward. India with its rich heritage and diversified culture also varies a great deal in sweet preparations. Sweets are either prepared at home or eaten out not limited to any one occasion. Most common are parties, lunch/dinner invitations, birthdays, festivals, anniversaries and, in general, eating out. There are numerous homemade and traditional sweets or desserts prepared which vary from region to region and place to place. They are usually passed on from generations to generations. The most common preparations that are region specific but not limited to are as follows:

### North India/Nepal

Kheer, Gulaab Jammun, Kulfi, Halwa (Suji or Gaajar or dhudhi), Mahi

### South India

Payasam, Sweet Pongal, Laddu

### East India

Rosogolla, Misti doi, Pithe, Sandesh, Rasmalai

### West India

Besan Laddoos, Shrikhand

Irrespective of the region one belongs to, the main ingredients that are used in these preparations are grains, sugar, milk and fats or oils. These ingredients are a source of carbohydrate and calories and must be eaten cautiously.

The first ingredient is usually sugar, a fast absorbing carbohydrate that is absorbed in the blood stream very quickly and raises blood sugar. It is a concentrated source of calories (1 tsp or 5 gms = 20 calories) and therefore is referred to as a Calorie Sweetener as compared to a non-caloric sweetener such as 'Sweet and Low' or 'Equal' or 'Splenda' ®. Portion control is one big key to successfully manage diabetes.

The second ingredient most commonly used in the preparation of sweets and desserts is milk. Most homemade desserts use either milk or milk products in the form of plain and sweetened yogurt, condensed milk fudge (khoa), fresh chenna and paneer cheeses, ghee and clotted cream. However, most of these products when prepared from whole, evaporated, condensed milk or half n half or full cream can raise blood cholesterol or contribute to heart disease. Most of the desserts or sweets are prepared by either whole milk or half-and-half for rich and creamy taste.

### *Modifications/Tips*

1. Use Non-Calorie Sweetener in the preparation of sweets and desserts. Reduce the portion sizes. If you cannot make the entire dish with non-calorie sweetener, then use only  $\frac{1}{4}$  of the amount of sugar suggested in the recipe and substitute the rest with non-calorie sweetener
2. Try using canola or olive oil for frying. Shallow frying is better than deep frying and using a non-stick pan usually consumes less oil. Cooking spray equally does well and is recommended for shallow frying.

3. Use 1% milk to make Mahi, Kheer, Payasaam, Halwa, yogurt for Shrikhand and Mistidoi, chenna for Rosogolla and Sandesh, paneer cheeses, custard and pudding.
4. Squeeze the syrup out from Rosogolla, Gulab Jamun and other sweets that are immersed in sugar syrup or make the syrup using non-calorie sweetener.
5. Try to eat only half or one piece depending on the size, if the recipe is not modified. Often sweets are served as a form of prasad or prasadam in places of worship. Learning to eat smaller portions is always helpful. Count them as carbohydrate choices.
6. Use low-fat or fat-free evaporated milk and unsweetened condensed milk if a recipe calls for regular condensed milk.
7. Total Carbohydrate content should be equal to or less than 15gms for a serving. Therefore, while making a dessert that includes grains, sugar and milk which are all carbohydrate sources should be modified to avoid a high glycemic response.
8. It is also a good practice to read labels and to look for total fat, carbohydrate sodium, and cholesterol content when buying a product if the nutrition information is available.
9. Remember to count dessert as a carbohydrate source and make appropriate adjustments in the diet and insulin intake where ever applicable.
10. Self monitoring of blood glucose (SMBG) is recommended to keep a track of your blood sugars. If it is high before a meal, passing the desserts may be a good idea. Generally, “Blood Sugar” and “Blood Glucose” refer to the same measure. Blood glucose is the value that indicates glucose content in the blood when tested. Fasting blood glucose levels refer to the blood test that is done in the morning before any food is eaten while Post –Prandial or Post meal is done 1-½ to 2 hrs after eating a meal.

### *Carbohydrate Loading*

Feasting on a high carbohydrate diet may increase blood glucose to such high levels that bringing it down would be very difficult. This is called carbohydrate loading. Recent studies have focused on carbohydrate loading as being the primary factor that has a direct influence on post meal blood glucose. Therefore spacing of meals is very important and it has been found that 6 small meals are better than 3 large meals.

In general it is recommended that carbohydrates be limited to only 3-4 servings per meal. For example 1 roti w/ ½ cup dal + ½ cup yogurt is 3 carbohydrate choices. If you add ⅓ cup cooked rice to your meal then it becomes 4 carbohydrate choices. Besides, it leaves no room for desserts. But if desserts were to be included then with prior planning, one carbohydrate could be omitted from the main meal. This way, the discomfort from over eating a high carbohydrate and fat-loaded meal can be avoided. Proteins are found mainly in foods such as lean meats, low-fat soy, poultry (skinless), egg, non fat cheese, paneer/chenna or lentils. Increasing fiber in the diet has been found to be helpful in the management of diabetes and heart disease. Incorporation of whole wheat breads, whole grains, raw vegetables and fruits, whole wheat flour such as rotis or tortillas, legumes etc would provide with fiber. Hence, the bottom line is to monitor carbohydrate content in a meal and avoid carbohydrate loading.

**Sharmila Chatterjee, MSc, MS, RD, CDE is a Registered Dietitian (RD) and Certified Diabetes Educator (CDE). She is the Program Manager & Nutrition Consultant for the California Diabetes and Pregnancy Program called “Sweet Success” for Region 9 (San Diego and Imperial County). She also is the Out-Patient Dietitian for University of California San Diego (UCSD) Medical Center. Contact information [schatterjee@ucsd.edu](mailto:schatterjee@ucsd.edu) (W) or [sharmilabchat@gmail.com](mailto:sharmilabchat@gmail.com) (H)**



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# Chapter 14

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## Managing your Menu in an Indian Restaurant

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Karmeen Kulkarni, MS, RD, BC-ADM, CDE

Eating out at restaurants or bringing takeout food is common in the lifestyle of the average immigrant or person of East Indian origin. At least 3-4 meals are eaten away from home each week. Or there is an increase in buying convenience or packaged foods from Indian food stores or supermarkets to save preparation and cooking time. Eating out is one of the social and enjoyable recreations for many individuals.

Following are a list of tips to assist in making healthful food choices when eating out:

### Lets start with appetizers

A healthful appetizer in Indian cuisine is rare, most are deep fried, for example : samosas, pakoras, puris. Papad can be either fried or baked, so of course the baked version is the preferred healthful piece. Recommendations are to share the appetizer or take a half of two different types.

### Soups

Typical Indian soups are a lentil variety or a mulligatawny type soup. Both of these type of soups are healthy, low in fat and calories and high in carbohydrates. Other types of healthful soup choices, are a clear mulligatawny, a light rasam , sambar, or a yogurt base Gujarati kadi. Creamy soups with coconut, which is high in saturated fat should be an infrequent choice.

### Breads

There are healthful options and of course the not so healthful ones. Papads if they are baked area great

choice, the fried ones are the ones to avoid. Chappatis and naans are fine as long as they are not swimming in ghee or oil. Puris and parathas are also laden with fat and not a great choice. Size always matters , so try and select the smaller ones.

### Entrees

Entrees to keep total fat , saturated fat and calories on the low end , if you are non-vegetarian, try and select fish , chicken , or shrimp. Tandoori and tikka can be low in fat, malai and korma dishes are creamy and high in fat, and can be incorporated in the not-so frequent list .Try and reduce the fried versions of the non - vegetarian items. If you are vegetarian meatless entrees are a recommended choice, however again check out the oil and or the ghee in the entrée.

### Rice

Rice most restaurants serve plain pullao, a healthful version .And if one wants something more, biryani is always on the menu, there are many varieties of biryani, the chicken , shrimp and vegetable versions would be recommended over the lamb and beef , mainly for the fat content. Portion size is a key with regards to rice items, as one-third cup of cooked rice is a starch or carbohydrate serving, so attention to the amount of rice as part of the meal is always helpful.

### Vegetable dishes

Menu items made with garbanzos, lentils, potatoes, green peas are starch or carbohydrate servings, and

should be counted as such. Vegetables like spinach, cauliflower, carrots, onions and /or tomatoes, are all non starchy, and lower in carbohydrates and calories than the starchy ones.. These are in the form of curries and if limited oil is used then they are a definite healthy addition to the menu.

### **Accompaniments and condiments**

*Raita* (if prepared with non-fat or low -fat yogurt) and all the other chutneys, like mint and tamarind, are all prepared with a variety of low calorie ingredients, and spices. The pickles and some chutney though low in calories, maybe high in sodium and if a person has hypertension, then it would be a red flag, and a reduced intake would be recommended.

### **Desserts**

Desserts are an integral part of the meal, kulfi, various versions of kheers, are all high in calories and saturated fat, and should be eaten with caution or with portion sizes in mind. Moderation being the key.

It is easy to choose a healthy meal in an Indian restaurant, the main items to watch out for are the fats, fried foods, and overeating. Portion control should not be too difficult, as very large portions are not served. Try to not over order and not overeat, but enjoy and stay healthy.

**Karmeen Kulkarni, MS, RD, BC-ADM, CDE is the Director, Scientific Affairs, Abbott Diabetes Care. She has served as the President, Health Care & Education for the American Diabetes Association. Contact information [kdev.kul.22@gmail.com](mailto:kdev.kul.22@gmail.com)**

# Chapter 15

## Carbohydrate Counting for Indian Foods

Karmeen Kulkarni, MS, RD, BC-ADM, CDE

Carbohydrate counting is a meal planning tool that helps plan and eat balanced meals and control blood glucose levels, along with the medications and physical activity. When a person uses carbohydrate counting, the focus is on the carbohydrate in the food. This is due to the fact that carbohydrate raises your blood glucose much more rapidly than the other two macronutrients that provide calories; protein and fat (excluding alcohol, which is not a macronutrient).

Calculating the amount of carbohydrate in each meal or snack that a person eats each day can help in keeping the blood glucose at an optimal level, adjust the diabetes medication or insulin as needed.

Most often carbohydrate foods are associated with starches. For example: pasta, bread, potatoes, corn all contains carbohydrate. But these are not the only foods that contain carbohydrate. Following is a more complete list of the food groups whose calories are mainly from carbohydrate:

- Starches: rice, pasta, bread, cereal, crackers
- Starchy vegetables: potatoes, corn, green peas, beans and lentils
- Fruit and fruit juices
- Non Starchy vegetables: spinach, tomatoes, cauliflower
- Dairy Foods: yogurt, milk, and other dairy foods
- Sweets / Desserts: cakes, cookies, candy
- Beverages high in sugar

Foods that do not contain carbohydrate in them are:

- Meats (poultry, fish, seafood, eggs, red meat)
- Fats (butter, oil, margarine, nuts have some carbs)

The carbohydrate content of these foods can be found in the chapter on Food Exchanges

### Carbohydrate Counting and Blood Glucose Control?

Blood glucose levels are directly related to the amount of carbohydrate one eats. If the amount of carbohydrate is tracked at meals and snacks, and the blood glucose levels are taken before and two hours after the meal; a trend or pattern will emerge. Keeping an eye on the carbohydrate intake daily and eating the same amount each day, will assist in maintaining the blood glucose levels within the target range.

### Starting Carbohydrate Counting

The focus on basic carbohydrate counting is to eat about the same amount of carbohydrates at the same time each day to get an estimate on how much carbohydrate effects the blood glucose levels before and two hours after a meal. Counting carbohydrate can be done either way. Count the total grams of carbohydrate in a meal or snack; or a carbohydrate serving is equal to 15 grams of carbohydrate (based on the exchange food list). The size of the serving will vary based on the type of food you plan to eat, for example ½ cup of cooked aviyal or a three inch round idly or a six inch chapatti or phulka or ½ cup of sambar. All of these foods contain 15 grams of carbohydrate per serving. This means that if you eat

more than one more serving of the food item, then you will need to count the carbohydrate in your serving size you have eaten. The exchange lists in this book contain a listing of the 15 gram portions of commonly eaten Indian foods.

### **How much Carbohydrate should a person eat?**

Each person has their own threshold for carbohydrate; the correct amount for them. A few of the areas to consider when trying to estimate the amount of carbohydrate amount for the day is a person's weight and height, the usual food intake, daily work and leisure schedule, the favorite foods, amount of daily physical activity, target blood glucose goals, diabetes medications or insulin (type of insulin and the timing of insulin action)

For a female, a basic rule of thumb for estimating the carbohydrate servings is approximately 45-60 grams of carbohydrate, or three to four carbohydrate servings per meal. For males, it is four to five carbohydrate servings per meal or 60-75 grams of carbohydrate per meal. Plan to keep the carbohydrate amount the same at meals and snacks, until the person feels comfortable to move forward with variations. A Registered Dietitian with expertise in Indian foods and carbohydrate counting would be a resource to consult re individualizing the carbohydrate prescription.

### **Tips for Successful Carbohydrate Counting**

Carbohydrate counting takes a bit of practice, but it's a great way to learn about eating well with diabetes. It is one option with regarding to meal planning for diabetes. Here are tips that will help to get you started. These are some ideas from which you can select what works for you:

1. *Educate Yourself:* Attend classes on diabetes offered at clinics and hospitals related to diabetes management. Read everything your doctor, endocrinologist or Certified Diabetes educator has provided to you.
2. *Start small:* Know the insulin to carb ratio and what one unit of insulin does to your blood glucose without eating.
3. *Begin at Home:* It's always easier to eat at home than eat out because you know the ingredients.
4. *Test your blood glucose (BG) frequently:* Test your BG before and after you eat, to see what impact each food has on your BG.
5. *Learn to read the nutrition facts label:* It is easier to dose insulin when the carbohydrates are listed on the package, except for fruits, and vegetables.
6. *Keep it simple:* Keep it simple. Stick to certain foods like salad dressing you like.
7. *Be consistent:* The trick is to be consistent with habits and the volume of food you eat.
8. *Find Technology that works for you and use it:* You may use the Lose it iphone app to look up food's carbohydrate counts. It will help with recipes and nutrition information for one serving.
9. *Figure out what you can't eat:* Most people with diabetes can eat anything in moderation, but carbohydrate counters sometimes find foods that just aren't worth the glucose spikes.
10. *Study your body:* A little bit of record keeping goes a long way toward helping you figure things out about food and insulin dose.
11. *Plan it out:* Do your grocery shopping and meal planning the night before so you know what you are having.
12. *When you are at a restaurant. Learn how to improvise:* Don't take insulin until you see the menu.
13. *Do your homework:* Always check the menu before you go to a restaurant. It's okay to ask for substitutions.
14. *Stay current:* Use different lists of foods as it helps to keep current on what the food industry has to say about certain cultural foods, uncommon foods and popular foods.

### *Carbohydrate Counting for Indian Foods*

15. *Get comfortable with guesswork:* If the meal is mainly pasta, estimate the quantity of noodles and the dose of insulin.
16. *Get up to speed on the internet:* You can look up anything on the internet. You can't weigh everything when you go out to eat.
17. When eating out at a restaurant, order basic foods.
18. If it is an unknown restaurant, try to order lower carb items. Never take anything for granted.
19. *Pay attention to portion size:* Learn what average portion sizes look like and avoid large meals when eating out.
20. Share your meal. The danger of eating out is you get huge portions. Split the food up on the plate into portion sizes before you start eating.
21. Weigh your food with a scale
22. *Be smart about mindless munching:* When you are eating things like chips, count out one portion instead of eating your way through the bag or bowl.
23. *Don't expect your book, app or list to have all the answers:* Try to stay away from things that you know are going to spike your blood glucose. Stay with foods you know.
24. *Learn the rules then ignore ones that don't work:* Learn what different foods do for you.
25. *Know thyself:* Carbohydrate counting is individual. Eat and test is the rule of thumb.
26. *Don't worry about being an expert:* You will never feel like you have it 100 percent but you get used to it. Plan for a refresher diabetes classes.
27. *Be aware of the following warning signs:* Hypoglycemia usually sets in with some signals like shakiness, dizziness, hunger, mood changes, increased sweating, head ache, and pale skin color. Keep carbohydrates on hand or pack of glucose tabs.
28. *Treat immediately:* Treat your low blood glucose with 15 grams of carbohydrate, wait 15 minutes, then check your blood glucose again. Test and treat before driving, as needed.

**Karmeen Kulkarni, MS, RD, BC-ADM, CDE; is Director, Scientific Affairs, Abbott Diabetes Care. She has served as the President, Health Care & Education, American Diabetes Association. She has pioneered the carbohydrate counting approach for people with diabetes. Contact information kdev.kul.22@gmail.com.**

**Tips for Carbohydrate counting was done by Chhaya Patel, MA, RD, CSR, DaVita Renal/ Divisional Dietitian. She is the Area 1 Representative for Renal Practice Group of the American Dietetic Association. Contact information 925-937-0203 or chhaya88@hotmail.com.**

# Chapter 16

## Healthy Weight: Make it Your Lifestyle! Healthy Choices in Nutrition and Physical Activity are Most Effective in Fighting Obesity

Dr Wahida Karmally, DrPH, RD, CDE, CLS, FNLA

### Maintaining a Healthy Weight is a Balancing Act

Calories In = Calories Out



Obesity is a growing epidemic worldwide and the second leading cause of preventable death in developing countries

Overweight and obesity are major risk factors for a number of chronic diseases, including diabetes, heart diseases and cancer. Coronary heart disease is twice as common in obese people as in normal-weight people, and obesity substantially exacerbates all cardiac risk factors including diabetes. Obesity is associated with decreased longevity and quality of life.

### The Health Consequences of Obesity

- Coronary heart disease
- Type 2 diabetes
- Cancers, such as endometrial, breast, and colon
- High blood pressure (hypertension)

- High total cholesterol or high levels of triglycerides (dyslipidemia)
- Stroke
- Liver and gallbladder disease
- Sleep apnea and respiratory problems
- Osteoarthritis
- Reproductive health complications

Obesity also has physical, psychological, and social consequences for adults and children. Children and adolescents are now developing obesity-related diseases, such as type 2 diabetes, that in the past were seen only in adults. One study of 5- to 17-year-olds found that 70% of obese children had at least one risk factor for cardiovascular disease and 39% had at least two risk factors.

Overweight and obesity can be defined as disease states in which excess body fat has accumulated to an extent that may have a negative impact on the health status of an individual. Obese individuals can differ not only according to the degree of excessive fat, which they store, but also in the regional distribution of the fat in the body. Excess abdominal fat is as great a risk factor for disease as is excess total body fat. Overweight is currently defined as body mass index (BMI) of 23 to 24.9 and obesity as a BMI of  $\geq 25$  according to the World Health Organization Western Pacific Region.

**BMI=weight (pounds) X 703/height (inches)<sup>2</sup>**  
**<http://www.nhlbisupport.com/bmi/bmicalc.htm>**

Asian Indians with a BMI value in the normal range have higher associated risks. Consult your doctor for your healthy BMI.

### Waist Circumference

Besides using weight and BMI to identify health risk, a large waist circumference is another sign of increased risk for many health problems including:

- Heart Disease
- Type 2 Diabetes
- High Blood Pressure

Where your fat is located makes a difference. If you are carrying fat around the middle, mainly around your waist (apple-shaped), you are more likely to develop health problems than if you carry fat mainly in your hips and thighs (pear-shaped).

A high-risk waist circumference is:

- A man with waist measurement over 35 inches
- A woman with waist measurement over 31 inches

Track your waist circumference as you work toward your weight loss goals.

To measure your waist circumference, place a tape measure around your bare abdomen just above your hip bone. Be sure that the tape is snug (but does not compress your skin) and that it is parallel to the floor. Relax, exhale, and measure your waist



Healthy choices in nutrition and physical activity are most effective in fighting obesity.

Fad diets that promising fast results limit your nutrient needs, can be unhealthy, and tend to fail in

the long run. Controlling your weight with foods dense in nutrients rather than just “empty” calories contributes to good health now and as you get older.

In the past few years, a modest weight loss, defined as a **weight loss of 5% to 10%** of baseline weight, has received increasing attention as a new treatment strategy for overweight and obese patients. Even a modest weight loss seems to have a positive effect on obesity-related health problems.

The key to achieving and maintaining a healthy weight is about a lifestyle that includes enjoyable and healthful foods, regular physical activity, and balancing the number of calories you consume with the number of calories your body uses. You need to enjoy your food- just ***eat less***.

### Weight Loss Guidelines

#### Control Calorie Intake

- self monitor regularly to help recognize and correct any fluctuations quickly
  - Weigh yourself twice a week
  - Track your food intake to calculate calorie intake <http://www.fitday.com/> (free online diet journal)
- eat breakfast regularly to help spread your calorie intake throughout the day. Also curbs overeating and excessive snacking
- exercise regularly
  - Spend 60 minutes daily on physical activity (walking, household chores, dancing etc). Start small - walk 10 minutes/day to start, then increase by 3-5 minutes each week.

#### Expanding Portion Sizes

Control portion sizes to control dress size by:

#### At home

- Eat off of a smaller plate so that the portion appears to be more than it actually is
- Don't make big batches that will allow you to



over-eat

- Wrap up any leftovers before the meal begins to prevent second helpings

### **If you are eating out**

- Tell the waiter NOT to bring the bread/naan basket
- Split a regular sized meal with a friend or family member
- Eat fresh fruit in place of high fat desserts

Balancing calories is to eat foods that provide adequate nutrition and an appropriate number of calories. You can help children learn to be aware of what they eat by developing healthy eating habits, looking for ways to make favorite dishes healthier, and reducing calorie-rich temptations.

### **Encourage healthy eating habits**

There's no great secret to healthy eating. To help your children and family develop healthy eating habits:

- Provide plenty of vegetables, fruits, and whole-grain products.
- Include low-fat or non-fat milk or dairy products.
- Choose lean meats, poultry without skin, fish, lentils, and beans including tofu
- Limit sugar-sweetened beverages.
- Limit consumption of fat and saturated fat
- Be mindful of serving size

[http://www.cdc.gov/healthyweight/healthy\\_eating/](http://www.cdc.gov/healthyweight/healthy_eating/)

***Remember that small changes every day can lead to a lifetime of healthful returns!***

### **Be creative in making favorite dishes healthier**

The recipes that you may prepare regularly, and that your family enjoys, with just a few changes can be

healthier and just as satisfying. You may makeover recipes in several ways:

- Use evaporated skim milk or a few pureed almonds in place of heavy cream
- Use low fat or non-fat yogurt in place of full fat yogurt
- Use canola oil or olive oil in place of butter, ghee or vanaspati, in smaller amounts
- Add larger amounts of vegetables such as greens, okra, tomatoes to dals, sambar
- Use whole wheat flour to prepare chappatis, naan
- Add vegetables to rice and pasta
- Bake or saute with oil spray instead of frying foods

### **Remove calorie-rich temptations for daily consumption!**

Although most foods can be enjoyed in moderation, save the calorie-rich temptations of high-fat and high-sugar, or salty snack for special occasions. An attractive bowl of fruit on the kitchen counter or in your refrigerator can be very tempting for an after school or late night snack.

### **Raise your Fitness Level One Step at a Time**

#### ***At work***

- Take stretch breaks during meetings
- Have a “walking” meeting- get your colleagues to walk while you discuss business
- Take the stairs- the cheapest gym available!
- Replace your coffee break with a walking break
- Take a brisk walk before lunch for 10 minutes

#### ***At home***

- Create a new morning routine. Start your day with 10 minutes of movement indoors or outdoors

*Healthy Weight: Make it Your Lifestyle! Healthy Choices in Nutrition and Physical Activity are Most Effective ...*

- Go for a bike ride
- Trade in a power mower for a push mower
- Park the car 10 minutes from the shopping center
- Start a neighborhood walking club
- Play 'catch' or fly a kite with your children
- Dance to your favorite up-beat music for 10 minutes a day

**How to lose one pound a week**

- One pound of body fat =3500 Calories
- Subtracting 500 Calories a day from your daily caloric intake will result in the loss of 1 pound a week.

- This can be done with decreased food intake or replaced with a lower calorie alternative that is enjoyable

Have a fresh fruit in place of a large samosa as a snack (100g samosa has 400 calories, 100 grams murukku have 530 Calories) and increased physical activity. Step up with 10,000steps to burn 300 Calories or spend ½ hour mopping your floors plus ½ hour doing housework to burn 230 Calories.

**Dr. Wahida Karmally is Associate Research Scientist, Director of Nutrition in the Irving Institute for Clinical and Translational Research and Lecturer in Dentistry at Columbia University. Contact information [wk2@columbia.edu](mailto:wk2@columbia.edu).**

# Chapter 17

## Exchange Lists for Indians with Diabetes

Chhaya Patel, MA, RD, CSR

### What are Exchange Lists?

Exchange lists are foods listed together under different food groups because each serving of a food has about the same amount of carbohydrate, protein, fat, and calories as the other foods on that list. Carbohydrates are found in mainly foods rich in starches and sugars, proteins are found mainly in meats, poultry, seafood, eggs, dairy and legumes and fats and oils are found mainly in butter, hydrogenated fats, margarine and all oils. Carbohydrates, proteins and fats yield calories and a person with diabetes must make sure that there is no overload of any or all of these nutrients in a day's meal. That is why with an Exchange List, any food on the list can be exchanged or traded for any other food on the same list. Exchange lists and a meal plan can help you make healthy choices. There are three main groups - the Carbohydrate group, the Meat and Meat substitute group, and the Fat group. Foods in fat group are divided into monounsaturated, polyunsaturated, and saturated fats.

### Food Group

#### 1 Starch Exchange

(15 gms Carbohydrate, 3 gms protein, 0-1 gm fat, and 80 calories)

Food	Portion
Aviyal	½ cup
Bran cereal	½ cup
Bagel	½ (1 oz)
Bulgur	½ cup

Bread	1 slice (1 oz)
Cereals	½ cup
Bread sticks (4" long)	2 (⅔ oz)
Cornmeal	3 Tbsp
Couscous	⅓ cup
English muffin	½
Hot dog or hamburger bun	½ (1 oz)
Idli, plain	3" round
Flour	3 Tbsp
Naan	¼ of 8"x2"
Granola, low fat	¼ cup
Grape-Nuts	¼ cup
Pita (6")	½
Grits	½ cup
Phulka/sookhi roti/ chapati	1 (6")
Mumra (puffed rice)	1 ½ cup
Plain Dosa	1
Kasha	½ cup
Plantain, green	⅓ cup
Millet	¼ cup
Raisin bread	1 slice (1 oz)
Muesli	¼ cup
Rice, plain, cooked, wh/br	⅓ cup
Oats	½ cup
Roll, plain, small	1 (1oz)
Pasta	½ cup
Roti (bajra, corn, juwar)	½ (6")
Puffed cereal	1 ½ cup
Sambar	½ cup
Rice milk	½ cup
Tortilla, corn/flour (6-8")	1
Rice vermicelli	½ cup
Waffle (4 ½" low fat)	1
Wheat germ	3 Tbsp

*Exchange Lists for Indians with Diabetes*

**Starchy Vegetables  
Crackers and Snacks**

Baked beans	1/3 cup
Animal crackers	8
Corn	1/2 cup
Graham crackers	3
Corn on cob	1 (5 oz)
Matzoh	3/4 oz
Mixed vege (corn, peas)	1 cup
Melba toast	4 slices
Peas, green	1/2 cup
Oyster crackers	24
Plantain	1/2 cup
Popcorn (no fat)	3 cups
Potato, baked or boiled	1 small
Pretzels	3/4 oz
Potato, mashed	1/2 cup
Rice cakes	(4") 2
Potato subji (low fat)	1/2 cup
Whole wheat crackers	3/4 oz
Squash, winter	1 cup
Saltine crackers	6
Yam, sweet potato, plain	1/2 cup
Chips (fat free)	3/4 oz

**1 Starch + 1 Fat 1 Starch+ 1 Very Lean Meat**

(15 gms carbohydrate, 3 gms protein, 0-1 gm fat, and 80 calories.)

<b>Food</b>	<b>Portion</b>
Biscuit	(2 1/2") 1
Beans and peas	1/2 cup
Chow mein noodles (Garbanzo, pinto,	1/2 cup
Corn bread (2") kidney, white, split black-eyed)	1 (2 oz)
Crackers, butter type	6
Croutons	1 cup
Lima beans	2/3 cup
French fried potatoes	16-25 (3 oz)
Lentils	1/2 cup
Granola	1/4 cup
Miso	3 Tbsp
Muffin, small	1 (1 1/2 oz)
Tomato dhal	1/2 cup

Pancake (4")	2
Toor dhal, ckd	1/2 cup
Popcorn, microwave	3 cups
Rasam	1 cup
Purries	2 (5")
Mung dhal, ckd	1/2 cup
Paratha or Thepala	1 (6")
Dhansak	1/2 cup
Dhokla	1 "Square
Poha	1 cup
Matki usal	1/2 cup
Sandwich crackers (cheese)	3
Stuffing, bread	1/3 cup
Taco shell (6")	1
Waffle (4 1/2")	1

**Fruit Exchange**

15 gms carbohydrate and 60 calories.

Apple, small, unpeeled	1 (4 oz)
Peach, medium, fresh	1 (6 oz)
Applesauce, unsweetened	1/2 cup
Peaches, canned	1/2 cup
Apples, dried	4 rings
Pear, large, fresh	1/2 cup
Apricots, fresh	4 whole
Pears, canned	1/2 cup
Apricots, dried	8 halves
Pineapple, fresh	3/4 cup
Apricots, canned	1/2 cup
Pineapple, canned	1/2 cup
Banana, small	1 (4 oz)
Plums, small	2
Blackberries	3/4 cup
Plums, canned	1/2 cup
Blueberries	3/4 cup
Prunes, dried	3
Cantaloupe, cubes	1 cup
Raisins	2 Tbsp
Cherries, fresh	12 (3 oz)
Rasberries	1 cup
Cherries, canned	1/2 cup
Sapota (chiku)	1 med
Seetaphal	1 med
Strawberries, whole	1 1/4 cup
Dates	3

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Tangerines, small	2 (8oz)	Brussels sprouts	Spinach (palak)
Figs, fresh	2 medium	Cabbage	Summer squash
Watermelon	1 slice or 1 ¼ cup	Carrots	Taro leaves
Figs, dried	1 ½	Cauliflower (gobi)	Taro roots
Fruit cocktail, Fruit Juice:	½ cup	Celery	Tomatoes, fresh, canned, sauce
Grapefruit, canned	¾ cup	Cluster beans (guvar)	Turnip
Apple juice/cider	½ cup	Cow pea pods	Water chestnuts
Grapes, small	17 (3 oz)	Cucumber	Watercress
Cranberry juice	⅓ cup	Dill (suva bhaji)	Zucchini
Guava, medium	1 ½	Drumsticks (surgavo)	Eggplant (brinjal)
Cranberry cocktail	1 cup		
Honeydew melon, cubes (Reduced calories)	1 cup	<b>Vegetable Juices</b>	
Jambu	6	Fenugreek leaves (methi)	Carrot juice
Guava juice	½ cup	Green Onions or scallions	Tomato juice
Kiwi, medium	1	Green Papaya	Vegetable, mixed juice
Mango juice	⅓ cup	Greens (collard, kale, Mustard, Turnip)	
Loquat	4	Karela (bittermelon)	Kankoda (golokandra)
Grape juice	½ cup	Kohlrabi	Leeks
Mandarin oranges, canned	¾ cup	Lettuce	Mixed vegetables
Mixed juices, 100%	⅓ cup	Mushrooms	
Mango, small	½ or ½ cup		
Orange juice	½ cup		
Nectarine, small	1 (5 oz)	<b>Meat and Meat Substitutes</b>	
Pineapple juice	½ cup	<b>Very Lean</b>	
Orange, small	1	7 gms protein, 0-1 gm fat, 0 gm carbohydrate, and 35 calories.	
Prune juice	⅓ cup	Chicken or turkey (no skin)	1 oz
Papaya, cubes	1 cup	Fish	1 oz
Passion fruit	½ med	Shellfish (crab, lobster, shrimp)	1 oz

**Vegetable Exchange**

5 gms carbohydrate, 2 gms protein, 0 gm fat, and 25 calories per ½ cup cooked (100 gms) or 1 cup raw vegetables.

Artichoke	Okra (lady's fingers)
Artichoke hearts	Onions
Asparagus	Parwar
Bamboo shoots	Pea pods
Beans (green, wax, Italian)	Peppers
Bean sprouts (mung)	Pink beans (valore)
Beets (chukandar)	Radish
Bottle gourd (lauki)	Ridge gourd (torai or turia)
Broad beans (papdi)	Salad greens
Broccoli	Sauerkraut

Egg white	2
Egg substitutes	¼ cup
Cheese, fat free	1 oz
Cooked dhal or legumes	½ cup
Paneer, 1% milk	¼ cup

**Lean Meat**

7 gms protein, 3 gms fat, 0 carbohydrate, and 100 calories.

Beef, select or choice grade	1 oz
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*Exchange Lists for Indians with Diabetes*

Baked/Tandoori chicken (no skin)	1 oz	½% milk	1 cup
Chicken (skinless)	1 oz	Whole milk	1 cup
Pork, lean	1 oz	1% milk	1 cup
Lamb	1 oz	Evaporated whole milk	½ cup
Veal, lean	1 oz	Nonfat buttermilk	1 cup
Turkey (skinless)	1 oz	Goat's milk	1 cup
Fish, fresh or canned	1 oz	Evaporated skim milk	½ cup
Ground meat kabab	1 oz	Kefir	1 cup
Oysters	6	Nonfat dry milk	⅓ cup
Sardines	2	Lassi, regular	1 cup
Cottage cheese, 4.5% fat	¼ cup	Plain nonfat yogurt	¾ cup
Parmesan, grated	2 Tbsp	Fruit flavored yogurt (non-fat, sugar free)	1 cup

**Medium-Fat Meat**

7 gms protein, 5 gms fat, 0 carbohydrate, and 130 calories.

Beef, prime grades	1 oz
Pork	1 oz
Veal cutlet	1 oz
Chicken with skin	1 oz
Chicken, fish, lamb Tikka	3x1" pieces
Fish, fried	1 oz
Cheese, Feta, mozzarella, ricotta	1 oz
Egg	1
Soy milk	1 cup
Tempeh	¼ cup
Tofu	2 oz

**High-Fat Meat**

7 gms protein, 8 gms fat, 0 gm carbohydrate, and 150 calories.

Pork, spareribs, sausage, ground	1 oz
Cheese, all regular cheeses	1 oz
Processed sandwich meats	1 oz
Hot dog	1
Bacon	3 slices
Peanut butter	2 Tbsp
Paneer, regular	¼ cup

**Milk Exchange**

12 gms carbohydrate, and 8 gms protein.

*Skim and very low fat milk* (0-3 gms fat)

*Whole milk* (8 gms fat)

<b>Food</b>	<b>Portion</b>
Skim milk	1 cup

1% milk	1 cup
Evaporated whole milk	½ cup
Nonfat buttermilk	1 cup
Goat's milk	1 cup
Evaporated skim milk	½ cup
Kefir	1 cup
Nonfat dry milk	⅓ cup
Lassi, regular	1 cup
Plain nonfat yogurt	¾ cup
Fruit flavored yogurt (non-fat, sugar free)	1 cup
Lassi, non-fat, sugar free	1 cup
Paneer, 1% milk	1 oz
Masala Tea, with 1% milk	1 cup
<u>Low fat (5 gm fat)</u>	
2% milk	1 cup
Plain low fat yogurt	¾ cup
Sweet acidophilus milk	1 cup

**Fat Exchange**

5 gms fat and 45 calories.

**Monounsaturated Fats**

Avocado, medium	⅓ (1 oz)
Bacon, cooked	1 slice
Oil, canola, olive, peanut	1 tsp
Bacon, grease	1 tsp
Olives	8 large
Butter, stick	2 tsp
Nuts	
Whipped	1 Tbsp
Almonds, cashews	6
Reduced fat	2 Tbsp
Mixed	6
Ghee, clarified butter	1 tsp
Peanuts	10
Coconut	2 Tbsp
Pecans	4 halves
Half and half cream	2 Tbsp
Peanut butter	2 tsp
Cream cheese, regular	1 Tbsp
Sesame seeds	1 Tbsp
Reduced fat	2 Tbsp

**Saturated Fats\***

Tahini paste	2 tsp	Nuts, walnuts	4 halves
Shortening or lard	1 tsp	Oils, corn, safflower, soy	1 tsp
Sour cream, regular	2 Tbsp	Salad dressing, regular	1 Tbsp
		Salad dressing, low fat	2 Tbsp
Polyunsaturated Fats		Miracle whip, regular	2 tsp
Reduced fat	3 Tbsp	Miracle whip, low fat	1 Tbsp
Margarine, stick, tub	1 tsp	Seeds, pumpkin, sunflower	1 Tbsp
Mayonnaise, regular	1 tsp	*Saturated fats can raise blood cholesterol levels.	
Mayonnaise, reduced fat	1 Tbsp		

### Other Carbohydrate List: Sweets and Snacks

Many of these foods are concentrated source of carbohydrate and fat. Always check Nutrition Facts on the food label. It will be most accurate source of information.

<b>Food</b>	<b>Portion</b>	<b>Exchange per serving</b>
Angel food cake, unfrosted	1/12 the cake	2 carbohydrates
Banana chips	1 oz	1 carbohydrate, 2 fats
Bhel puri	1 oz	1 carbohydrate, 1 fat
Bhujia	1 oz	1 carbohydrate, 1 fat
Brownie, small	2" square	1 carbohydrate, 1 fat
Cake, unfrosted	2" square	1 carbohydrate, 1 fat
Cookies, fat-free	2 small	1 carbohydrate
Sandwich cookie with cream	2 small	1 carbohydrate, 1 fat
Cauliflower Bhajia	2 pieces	1 carbohydrate, 1 fat
Chevda mix	1 oz	1 carbohydrate, 1 fat
Chhunda (mango pickle)	2 Tbsp	1 carbohydrate
Chutney, tamarind	2 Tbsp	1 carbohydrate
Cranberry sauce, jellied	1/4 cup	1 1/2 carbohydrates
Cupcake, frosted	1 small	2 carbohydrates, 1 fat
Dahi vadai, non fat yogurt	2 pieces	1 carbohydrate, 1 fat
Doughnut, plain cake	1 medium	1 1/2 carbohydrate, 2 fats
Doughnut, glazed	2 oz	2 carbohydrates, 2 fats
Fruit juice bars, 100%, frozen	1 bar (3 oz)	1 carbohydrate
Fruit snack, chewy	1 roll	1 carbohydrate
Fruit spread, 100%	1 Tbsp	1 carbohydrate
Gelatin, regular	1/2 cup	1 carbohydrate
Ghari, no ghee topping	1	1 carbohydrate, 2 fats
Gingersnaps	3	1 carbohydrate
Granola bar	1 bar	1 carbohydrate, 1 fat
Granola bar, fat-free	1 bar	2 carbohydrates
Gulabjammun	2 med	2 carbohydrate, 2 fats, 1/2prot
Halwa, carrot and milk	1 piece	1 carbohydrate, 1 fat, 1 prot
Halwa, sooji and milk	1/4 cup	1 carbohydrate, 1 fat, 1/2prot
Handava	1 small piece	1 carbohydrate, 1 fat
Hummus	1/3 cup	1 carbohydrate, 1 fat

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Ice cream	½ cup	1 carbohydrate, 2 fats
Ice cream, light	½ cup	1 carbohydrate, 1 fat
Ice cream, fat-free, no sugar	½ cup	1 carbohydrate
Jam or jelly, regular	1 Tbsp	1 carbohydrate
Kachories, vegetable	2	2 carbohydrate, 2 fats
Kachories, mungdhal	2	2 carbohydrate, 2 fats
Kadhi	1 cup	1 carbohydrate, 1fat, 1 prot
Khandavi	6 pieces	1 carbohydrate, 1 fat, ½ prot
Khichadi, no ghee	½ cup	1 carbohydrate, ½ prot
Kulfi	½ cup	1 carbohydrate, 1 fat
Kheer	½ cup	2 carbohydrate, 3 fat, ½ prot
Laddoo, wheat	1 small	2 carbohydrate, 2 fats
Magas	1 ½" x 1 ½"	1 carbohydrate, 1 fat, 1 prot
Mathia	2 thin	1 carbohydrate, 2 fats
Milk, chocolate, whole	1 cup	2 carbohydrates, fat
Mohanthal	1 ½" x 1 ½"	1 carbohydrate, 1 fat, 1 prot
Muthia, dudhi	+ wheat flour	4 pieces 2 carbohydrate, 1 fat
Namkeen (snack mix)	½ cup	1 carbohydrate, 2 fats
Nankhatai	2 small	1 carbohydrate, 1 fat
Pakoda, spinach	3 piece	1 carbohydrate, 1 fat
Pani puri	6	1 carbohydrate, 1 fat
Papad	2	1 carbohydrate
Pav bhaji, small	3 oz	1 carbohydrate, 1 fat
Petha, pumkin	2" piece	2 carbohydrates
Pie, fruit, 2 crust	⅙ pie	3 carbohydrates, 2 fats
Pie, pumpkin or custard	⅛ pie	1 carbohydrate, 2 fats
Pizza, cheese, thin crust	¼ of 10"	2 carbohydrates, 2 med fat
	Meats, 1 fat	
Potato chips	12-18 (1oz)	1 carbohydrate, 2 fats
Potato Paratha	1 (6")	1 carbohydrate, 2 fats
Pudding, regular low fat milk	½ cup	2 carbohydrates
Pudding, sugar-free, low fat milk	½ cup	1 carbohydrate
Rasagolla	2 med	2 carbohydrate, 1 fat, 1 prot
Rasmalai, in reg milk	2 small	2 carbohydrate, 2 fats, 2 prot
Salad dressing, fat free	¼ cup	1 carbohydrate
Samosa, vegetable	1	1 ½ carbohydrate, 1 fat
Sherbet, sorbet	½ cup	2 carbohydrates
Shrikhand	¼ cup	1 carbohydrate, 1-2fat, 1 prot
Spaghetti, pasta sauce, canned	½ cup	1 carbohydrate, 1 fat
Sweet Roll or Danish	1 (2 ½ oz)	2 ½ carbohydrates, 2 fat
Syrup, light	2 Tbsp	1 carbohydrate
Syrup, regular	1 Tbsp	1 carbohydrate
Syrup, regular	¼ cup	4 carbohydrates
Tortilla chips	6-12 (1 oz)	1 carbohydrate, 2 fats
Undhiyu, with 1 tsp oil	½ cup	1 carbohydrate, 1 fat



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Uppuma, with 1 tsp oil	1/3 cup	1 carbohydrate, 1 fat
Uttapam, vege	1 small	2 carbohydrate, 1 fat
Vanilla wafers	5	1 carbohydrate, 1 fat
Vegetable cutlet	1 med	1 carbohydrate, 1/2 fat
Yogurt, frozen, low-fat, fat free	1/3 cup	1 carbohydrate, 0-1 fat
Yogurt, frozen, fat free, no sugar	1/2 cup	1 carbohydrate
Yogurt, low-fat, with fruit	1 cup	3 carbohydrates, 0-1 fat

**Free Foods**

Coriander chutney	1 tsp	100 mg sodium (Nirav)
Salsa	2 Tbsp	450 mg sodium (Taco bell)
Marinated chillies	1	

Follow American Dietetic Association Inc and The American Diabetes Association's Exchange lists for Meal Planning for the following lists:

- Free foods list
- Drinks
- Condiments
- Seasonings
- Combination foods list
- Fast foods list
- Sodium content of some of the foods on this exchange lists
- Avoid canned, cured, ready to eat and processed foods for sodium/salt restricted diets.

**Chhaya Patel, MA, RD, CSR, is the DaVita Renal/ Divisional Dietitian in the San Francisco Bay Area. She is a Certified Specialist in Renal Nutrition and the Area 1 Representative for Renal Practice Group**

**of the American Dietetic Association. She was the Associate Chair and Region V representative for CRN. Contact information 925-937-0203 or chhaya88@hotmail.com.**

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# Chapter 18

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## Selecting Foods from Different Food Groups in the Indian Cuisine

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Padmini Balagopal, Rita Batheja, Wahida Karmally, Karmeen Kulkarni, Ranjita Misra,  
Sudha Raj, and Nirmala Ramasubramanian

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### **The Dairy and Equivalents Group**

*(Fat-Free And Low-Fat Cheese, Milk, Yogurt And Equivalent Foods)*

#### **Use**

low fat or fat-free cheese, yogurt, curds and paneer made from skim or 1 % fat milk, low-fat soy and other beverages (usually with fortified with calcium-but watch for high sugar content and varying nutrient values!)

#### **Use Less Often**

Whole milk and whole milk products, full-fat yogurts, whole milk paneer, cheeses, sweetened flavored milk, ice creams, whole milk smoothies or milk equivalents from other sources that are high in fat and/or sugar etc.

### **The Meats, Legumes, and Equivalents Group**

*(Dry Beans, Eggs, Fish, Lean Meat, Nuts, Skinless Poultry And Seeds)*

#### **Use**

Egg whites, fish, legumes and dhals (remember they also have carbohydrates), lean meat, poultry (without skin), low-fat tofu, seitan, unsalted nuts and seeds.

#### **Use Less Often**

Egg yolks, creamed dhals, fried and or highly fatty and salted meats.

### **The Fruit Group**

#### **Use**

Apple, berries, grapes, mango, orange, papaya, pear, pineapple, plum, pomegranate, sapota, sita phal etc

#### **Use Less Often**

Preserves, dried fruits or fruits with added sugar, salt or fats

### **The Vegetable Group**

#### **Use**

Brinjal (eggplant), cabbage, capsicum, carrots, cauliflower, cucumber, drumstick, gourds like karela, mushrooms, radish, spinach, tomatoes in salads or with a little oil to sautee the seasonings

#### **Use Less Often**

Pickled or vegetables fried in oil such as bhajias, fried papads etc.

### **The Starch and Grains Group**

*(Whole, Fortified and Fiber-Rich Grain Foods)*

**Use**

Brown rice, bajra, quinoa, whole wheat pasta, 'samai', 'varagu', oats etc

**Use with Controlled Fat**

Idly, aviyal, biriyani, bissibele, dhansak, dhokla, dosa, dum aloo, khandvi, masala dosa, mutthiya, poha, pongal, pulao, puliodarai, etc

**Use Sparingly**

Bhajiya, boondi, chakkarai pongal, chakka-pradaman, fried dosa, fried vadams, golgappa, pani-

puri, puris, tikki, uthappam, vada, etc.( lower case)

**Concentrated Sweets, Fats, Oils - Use Sparingly**

butter, ghee coconut oil, coconut milk, vanaspati, sugar, gur, desserts such as gulab jamoon, , halwa, kheer, laddu, milkshakes, peda, pudding, rasmalai, rossogolla, badushah, barfi, bassundi, seera (sooji ka halwa), sonpapadi etc.

**Information was compiled by the reviewers of this book. Contact information (Padmini Balagopal, PhD, RD, CDE, IBCLC) [velchet2@gmail.com](mailto:velchet2@gmail.com)**

# Chapter 19

## Do Indian Spices & Condiments have a Role to Play in Preventive Health and Therapeutics?

Padmini Balagopal, Wahida Karmally, Karmeen Kulkarni,  
Ranjita Misra and Sudha Raj

Indian spices and condiments have been around for aeons and influence the nature, taste, flavor and characteristics of Indian dishes. Many of them are part of Ayurveda (the science of life and health) and it has always been a moot question as to whether they were added to enhance taste and flavor or to promote health because many of these spices and condiments have been ascribed health-promoting or therapeutic roles. In fact, it is postulated that some of them like turmeric were given religious

significance (to make sure it would be used). Scientific research is exploring the possible benefits, and/or the presence of bio-active substances, present in these accompaniments. In order to define their roles, it is necessary to itemize them and examine the evidence-based research available. Given below, is a list of some of the various spices and condiments that are added in one form or other to Indian dishes.

No	Ref	Spice/ Condiment	Botanical name	Note worthy data	'Putative' or ascribed benefits	Common dosage in a dish for 4 people	Evidence-based benefits/ side-effects*
1	-	Asafoetida (used to flavor dishes) 'Hing'	Ferula foetida	Acrid, bitter taste, strong, pungent alliaceous odor due to its sulphur compounds	Used as a digestive aid to relieve flatulence	Approx 1 tsp	No side-effects are known when used in food preparation.
2	[1, 2]	Basil (used in pesto, soups), also include 'holy' basil 'tulsi'	Ocimum basilicum (4 diff. types)	Seeds or leaves used. Has a clove scent	Anti-infective uses ascribed	A few leaves or 2 tsps of paste	Effectiveness for claims to treat flatulence and stimulate appetite has not been documented.

No	Ref	Spice/ Condiment	Botanical name	Note worthy data	'Putative' or ascribed benefits	Common dosage in a dish for 4 people	Evidence-based benefits/ side-effects*
3	[3-7]	Black Cumin 'Kalajheera'	Nigella sativa- essential oil- thymoquinone; alkaloids and saponins	Thymoquinone; nigellicine, nigellidine, saponins Nigella sativa- essential oil- thymoquinone;alk aloids and saponins	As a digestive aid	1 tsp	Potential to induce apoptotic activity in human breast cancer cell lines and reactivates epigenetically silenced genes; regulate blood glucose level, inhibit cholesterol absorption and produce dyslipidemic effects.
4	-	Black Pepper 'kali mirch' 'milagu'	Piper Nigrum	Used to season	Powdered black pepper and turmeric is used for cough and upper respi- ratory infections	½ tsp	No available evidence on benefits or side effects in human studies.
5	[8, 9]	Caraway seeds 'Sajeera'	Carum carvi	Carvone	Used to season dishes	1 and ½ tsp dried fruit and oil	Case studies and small trials on bronchial dilatory effects. Chemotherapeutic properties; Antimutagenic activity.
6	[10-13]	Cardamom 'Elaichi' 'Elakkai'	Elettaria cardamomum	Along with other ingredients it contains phytochemical - limonene and 1, 8- cineole.	As a digestive aid, relieve flatulence, stomach cramps	1-2 pods	Anti-oxidant and may have anti-spasmodic properties. No known harmful effects with amounts used in food preparation.
7	[14, 15]	Chillies ( active compound Capsaicin) Cayenne Pepper 'Lal mirchi'	Capsicum annum	Many varieties with varying Degrees of 'sting' measured in 'scoville heat units' - SCH	Believed to improve taste and health	1 tsp - 1 ½tsp	Capsaicin is used in topical pain medications. Large doses over a period of time can cause chronic gastritis, kidney damage and liver damages.
8	[16, 17]	Cloves Lavang Kirambu, Lavangam Lavangalu	Syzygium aromaticum	Can be eaten raw or used in dishes	Used to improve flavor; clove oil used for toothache	1 or 2	No side effects are known when used in food preparation.

*Do Indian Spices & Condiments have a Role to Play in Preventive Health and Therapeutics?*

No	Ref	Spice/ Condiment	Botanical name	Note worthy data	'Putative' or ascribed benefits	Common dosage in a dish for 4 people	Evidence-based benefits/ side-effects*
9	[18-20]	Cinnamon 'Dalchini' 'Patthai' Karuva	Sold as cinnamon Cinnamomum verum, Cinnamomum zeylanicum indigenous to Sri Lanka and southwest India	Inner layer of the bark	Used to improve flavor	¼ - ½ inch	Limited evidence for diabetes management. May benefit halitosis when cinnamon gum is chewed. No side effects are known when used in cooking.
10	[21, 22]	Coriander leaves (fresh) and Coriander seeds 'Dhanial' 'Kothmeer' 'kothamalli'	Coriandrum or sativum L Coriander sativum	Seeds are usually ground and leaves and stems used as such	Used for flavor	1 tsp or to taste	Reported to have bactericidal properties, anti-oxidant and hepato- protective properties.
11	[23]	Cumin seeds 'jheera'	Cuminum cyminum	Eaten raw or added to dishes	Used as a digestive aid	1 tsp	It has chelating power, lipid peroxidation inhibitor with highest chelating powers.
12	[24-26]	Curry leaves 'kadi patha'	Murraya koenigii	Breaking the leaves increases the flavor	Used for flavor and fragrance	1 tsp	Anti-diabetic effect on streptozotocin-induced diabetic rats.
13	[27]	Fennel seeds/Aniseed 'Saunf'	Pimpinella anisum	Eaten raw or used in cooking	Used as a mouth freshener and digestive aid; believed to be a galactagogue in breast feeding	1 tsp	Fennel seed is a potential source of natural anti-oxidants
14	[28]	Fenugreek seeds 'methi'	Trigonella foenum graecum	Usually mixed into dishes or sprouted etc	Help in digestion and diarrhea; believed to be a galactagogue in breast feeding	1 tsp	Fenugreek seeds have demonstrated a beneficial hypoglycemic effect in diabetic subjects

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No	Ref	Spice/ Condiment	Botanical name	Note worthy data	'Putative' or ascribed benefits	Common dosage in a dish for 4 people	Evidence-based benefits/ side-effects*
15	[29-33]	Garlic 'lasan'	Allium sativum	Used after sautéing in oil to flavor dishes	Used in different forms (powder, toothpaste, mouthwash, raw, crushed) Believed to have medicinal value and a galactagogue in breast feeding	1-4 cloves	Beneficial effects of CVD health, prevention of dental caries, and reductions in blood pressure
16	[34-36]	Ginger (fresh) 'adrak'	Zinziber officinale	Crushed and added to dishes	Used to contribute to health and help with digestion	1 inch piece	Increased intestinal motility.
17	[37, 38]	Kandanthippili 'pipali'	Piper longum	Crushed and added to dishes	Aid in digestion	1 tsp	Anti-amoebic activity and anti-inflammatory.
18	[39-41]	Nutmeg/ mace 'jaiphal' 'jaipatri'	Mystica fragrans	Whole nuts are preferable to ground nutmeg, as flavor deteriorates quickly	Believed to have psychological effects in varying forms and amounts	1-2 pinches	Nutmeg is poisonous and should be used in very small quantities in food preparation. Nutmeg poisoning occurs in large doses and can cause death.
19	[42, 43]	Onion 'Pyaz'	Allium cepa	Organo sulphur compounds. The outer layers contain quercetin- a flavonoid with sulfides.	Antioxidant properties, flavor and galactagogue (increase breast milk production)	1 small	Meta-analysis of 11 Randomized Control Trials indicated hypotensive effects, increased antioxidant status, and increased bioavailability of nitric oxide. Inconsistencies in human research.
20	[44]	Mango 'aam' 'Manga'	Mangifera Indica	Can be eaten raw or ripe. Used widely in chutneys, pickles, panna and other dishes	Antioxidant. To add 'zest' to dishes	1-2 fruits	No known side effects when used in food preparation but mango allergen may cause contact dermatitis of the lips or tongue. Reduces dental caries. Antioxidant (Vitamins A, C and E), dietary fiber and minerals).

*Do Indian Spices & Condiments have a Role to Play in Preventive Health and Therapeutics?*

No	Ref	Spice/ Condiment	Botanical name	Note worthy data	'Putative' or ascribed benefits	Common dosage in a dish for 4 people	Evidence-based benefits/ side-effects*
22	[45]	Mango ginger 'Am haldi'	Curcuma amada	Chopped and used as an accompaniment. Used to give the dish a 'zesty' flavor	Used as a digestive and anti-bloating aid.	1 Tbsp	Anti-microbial, anti-oxidant and platelet aggregation inhibitory activity.
23	-	Mango powder 'amchoor'	Mangifera Indica	Used to season dishes	Flavoring; to add zest	1 tsp	No available human studies.
24	-	Mustard seeds 'sarson' 'kadugu'	Brassica Nigra	Can be used whole or ground, available in white, black and brown forms. Mustard oil is used in cooking.	Used to flavor dishes but believed to produce 'heat' when consumed in excess.	1 tsp	No known side effects when used in food preparation. May cause allergy.
25	[46, 47]	Neem leaves	Azadirachta indica	Nimbin, nimbidin, nimbidol etc.	As a toxic killer due to its bitterness; neem sticks as a tooth brush; dry roasted need flower used in diarrhea ,	Oil, leaves, flowers and seeds	Small clinical trials on antioxidant properties; increase in CD4+ levels in HIV patients.
26	[48]	Oregano Ajwan Omum 'ajwan'	Oreganum vulgari  Trachysperum um ammi	Used to season dishes and add a distinctive flavor  Oleanolic acid, ursolic acid, flavonoids, tannins	Believed to be health promoting	1 tsp	Antioxidant effects, beneficial in preventing atherogenesis and certain types of cancer.
27	[49]	Poppy seeds 'postdana' Kasa-kasa	Papaner sommiferum	Used to season and flavor dishes	May cause positive results of opiates screening	½ tsp	A few reported cases of allergies to poppy seeds.
28	[50, 51]	Saffron 'keshar'	Crocus sativus	Used in desserts as a flavoring agent	Used to flavor milk, milk dishes and desserts. Used in pregnancy to promote fetal health and complexion!	A few stamens	Limited evidence as an antidepressant and relieve premenstrual syndrome



No	Ref	Spice/ Condiment	Botanical name	Note worthy data	'Putative' or ascribed benefits	Common dosage in a dish for 4 people	Evidence-based benefits/ side-effects*
29	[52, 53]	Turmeric 'haldi'	Curcuma domestica Curcuma longa  Curcumin	Used to season most non-sweet vegetable and legume dishes in the Asian cuisine	Regarded as anti- inflammatory, antiseptic, and health promoting effects; purifier	Average intake is 2-2.5g/day	Clinical trials using large doses show no toxicity of curcumin, small clinical trials showed anti-cancer effects; low bioavailability does not permit clarity of beneficial effects.

\*Studies done may be at doses very different from common usage.

\* There have been no recommended dosages established for the spices and condiments above and the responsible amount to use is not yet known. Consult your Medical Provider before use.

Ref = References

- indicates that there are no available evidence

Contact information (Padmini Balagopal PhD, RD, CDE, IBCLC) velchet2@gmail.com.

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# Chapter 20

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## Summary

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Padmini Balagopal, PhD, RD, CDE, IBCLC

This book has been written to help you take a *proactive* role with your health and help prevent and/or manage chronic disease. It is also written to *empower* you with information with which you can adapt the Asian-Indian cuisine into a health-promoting lifestyle that will help prevent the onset of risk factors for many diseases brought about by poor eating. Other lifestyle habits that include exercise and stress-relaxation techniques work synergistically not only to help you take charge of your health but also to optimize it.

This book is also meant to be a loud call to the men and women who have the condition of diabetes, hypertension or other lifestyle conditions to help prevent it in their children with appropriate lifestyle modifications. The introduction outlines the current health risks faced by the Asian Indian population with a description of some of the chronic diseases common to this group. The next section tells us how fetal nutrition, eating and lifestyle habits of children and adults have put us at risk for chronic diseases throughout the world epidemiologically. If we guide the eating habits of our children from a very young age, healthful eating can become second nature to them as they grow up and can help them in the future when they face healthy and unhealthy food choices!!! Many Asian Indians also face chronic heart disease and kidney disease and there are two sections that guide you through the Asian-Indian cuisine on how to eat to prevent and/or manage these conditions, both for the vegetarian and the non-vegetarian.

The Asian Indian cuisine has many interesting ways to prepare vegetables, (mainly stir-frying with different spices and condiments), legumes and lentils-also known as dhals (or dals) in a variety of gravies like sambaar or rajma, and even ways to include low-fat milk and yogurt into the everyday meal (khaddi, paneer or aviyal). When food is consumed in excess, when whole milk is used instead of 1% fat or fat-free milk to make the paneer or when just an excessive amount of foods are eaten within a day, foods can become 'less than favorable'. It is not the single 'soda', the 'chivda' or the 'small dessert' that become a problem but the quantity, frequency and quality of these dishes can affect the whole day's meal by making it high in calories, simple sugars, starches or oils and fats. The Asian-Indian meal can be a balanced meal, high in a variety of grains, vegetables and lentils and less on meat or meat alternatives. In these proportions, it can provide around 20-25 grams of valuable soluble and insoluble fiber, vitamins and minerals along with the benefits of spices and condiments (see section on Indian Spices and Condiments).

The different regional cuisines in this booklet talk about their characteristics and about how the usual diet of this region can be modified to become healthier. The Asian-Indian cuisine has been presented in six sections - the Eastern-Indian (Odia and Bengali) cuisine, the South Indian cuisine, the Maharashtrian cuisine, the Gujarati cuisine, the North Indian cuisine and the Nepali cuisine. In the chapter on Snacks, you will see the variety of snacks with cautionary alerts on how to keep snack portions

## *Summary*

small raising awareness on the possibilities of healthier substitutes for the fried snacks in the Asian-Indian cuisine. Indian desserts and sweets have had many unique characteristics from the use of 'reduced' milk to the use of a variety of bases from fruits and grains to even the use of vegetables. The chapter on Indian desserts sheds light on how to modify the many Indian desserts into becoming less calorie-intense.

The Asian-Indian cuisine, both in restaurants and in the home may have taken an unwise turn towards more fried, high refined foods lower in fiber and higher in salt. How to turn the Asian-Indian cuisine into becoming a high complex-carbohydrate, low-fat but high fiber cuisine is outlined in the section on 'How to modify a recipe'. Some of the current recipes are shown with health-promoting modifications. The next section is an appropriate follow-up as you will be guided through restaurant-eating and the many pitfalls one faces with ideas on how to select wisely using the 'healthier' more cardio-protective alternatives. You can request that dhals be prepared without malai, that palak paneer be prepared with low-fat paneer, that the oils like olive or canola be used, instead of hydrogenated fats including 'Vanaspati' or 'Dalda', that desserts be prepared to be less 'atherogenic' or 'diabetogenic'.

You will find that in each cuisine, all the foods are divided into different groups - Carbohydrates, Proteins and Fats, Dairy, Vegetables and Fruits. The section of Food Exchanges shows the amount of a food that makes up one serving and how they can be exchanged for one another within a food group. A guideline on selecting foods from each food group has also been provided.

The Asian Indian cuisine is usually high in carbohydrates and when carbohydrates become important in treatment regimens, the chapter on carbohydrate counting will help to guide the individual with specific tips to keep a count with foods in this cuisine.

Excessive weight has become a widespread issue that makes the individual vulnerable to chronic disease and general ill-health. There is a section in the book that guides you to interpret your weight, total body fat and abdominal adiposity that are crucial checkpoints. It also gives detailed guides to help you to lose excess weight with lifestyle modifications of exercise. These are vital points in self-management education that help you not only to achieve a healthy body weight but also help you to maintain it.

In recent years, there has been a lot of speculation about the role of Indian spices and condiments and a section in this book reviews the current research and literature on the role of the various spices and condiments to see if they play an active role in preventive health, therapeutics, or even palliative care.

What are some of the unhealthy trends among our children today? Drinking a lot of soda every day, eating a lot of high fat, high-refined carbohydrates and not maintaining good eating habits are factors that make the everyday diet of the younger generation weak in valuable fiber and nutrients. If we do not prevent our children from developing poor eating habits (such as indiscriminate snacking, eating 'fast foods' frequently and leading sedentary lifestyles from a very young age), the risk factors of becoming overweight follows easily and we may lose the weapon we have to prevent the onset of this disease as the next generation grows up. Bringing up our children on the Asian-Indian cuisine or managing our diabetes on this cuisine is not difficult once we know its strong points as well as the pitfalls that accompany it when it is not used properly. You will find that many chapters in this book caution the reader about weekend parties (common to this ethnic group) that can contribute to excessive eating.

The following sections include some concise tips to become aware of signs of hyperglycemia and hypoglycemia and tips on exercise and blood glucose management.

## **Tips on Blood Glucose Management**

When the portions are also large, then the body is stressed to try and keep the blood glucose within optimal ranges. Conversely, when food eaten is insufficient, then a person can suffer from hypoglycemia. See below for tips on signs and symptoms of these two conditions. Here are some of the signs & symptoms of **Hyperglycemia** (when blood glucose levels are higher than the range at which the body functions optimally) and **Hypoglycemia** (when blood glucose levels drop below this range). Remember that any of these symptoms does not necessarily mean that you have the condition. The best way to know is to test your blood glucose and consult your doctor.

### *Some of the Signs & Symptoms of Hyperglycemia*

- ***Increased thirst and urination***
- ***Weakness, pain in stomach, aching all over***
- ***Heavy labored breathing***
- ***Loss of appetite, nausea and vomiting***
- Fatigue
- Large amounts of sugar in blood
- Ketones in urine

### **What can you do?**

- Call the Doctor immediately
- Take fluids without sugar if able to swallow
- Test blood glucose frequently
- Test urine for ketones

### **What are the causes?**

- Not enough insulin
- Too much food
- Infection, fever, illness
- Emotional stress

### *Some of the Signs & Symptoms of Hypoglycemia*

- Cold sweats, dizziness, feeling faint
- Headache
- Pounding of heart, trembling, nervousness
- Blurred vision
- Hunger
- Inability to awaken
- Personality changes

### **What can you do?**

- Take Glucose tablets or orange juice (Your doctor may have specific instructions for you)
- Educate yourself about the 15-15 rule
- Check blood glucose levels
- Do not give insulin
- Do not give anything by mouth if unconscious
- Give glucagons according to package instructions

### **What are the causes?**

- Too much insulin
- Not enough food
- Unusual amount of exercise
- Delayed meals
- Alcohol effects without food

### ***How can you avoid Hyperglycemia or Hypoglycemia?***

Consult your Doctor and work with your dietitian/diabetes educator. Your dietitian can recommend a diet suited to your lifestyle and preferences. She/he can also show you the amounts of calories, carbohydrates, fats & proteins you are consuming presently, if you give him/her the information of the exact amounts consumed. So keeping a food record is a useful tool

### Eating Tips on Blood Glucose Management

(Ask your doctor what the optimal range of blood glucose for you should be and try to keep your blood glucose within this range)

There is no diet known as a ‘diabetes diet’ and no special foods are necessary. The Introduction explains how the body regulates glucose levels in the blood from the foods we eat. Foods available in the supermarket can be used and can be eaten but with the information and awareness, you can combine health-promoting foods in a moderate amounts so that the insulin produced by your body (along with any other medication that is prescribed by your Medical Provider) will help your body use the foods you eat and keep the blood glucose (or ‘blood sugar’ as it is commonly called) within the doctor-prescribed range.

Here are some tools that can help you achieve this goal:

1. Keep a record of foods and the approximate amounts till you get a good working knowledge with the help of your Medical Provider and Dietitian.
2. Use heart-healthy fats and oils – monounsaturated oils like olive oil, canola oil are recommended. If you use ghee, keep it to a minimum and for occasional use but also count it in your total daily fat allowance.
3. Include plenty of fresh or cooked vegetables (stir-fried with 1-2 tps of oil to season for 3-4 cups of vegetables is recommended). Eating patterns of some regions talk about the small quantity of vegetables eaten. This is where the eating patterns can be improved. While stir-frying vegetables, use the spices, garlic, onion, coriander and other spices of your choice to improve taste instead of large amounts fats and oils. Try to avoid ‘feasting’ and ‘fasting’. If you fast, make sure that you have a good balanced meal before and after a ‘fast’.
4. Make sure you include 6-8 cups of water every day. Try to avoid soda or juices as a beverage substitute for water especially for young children as this can become a habit that is tough to break!
5. Eat 3-4 cups of vegetables (without much oil) and fruits with whole grain cereals, brown basmati, whole wheat flour, oats to increase fiber intake
6. Avoid excess salt while garnishing foods.
7. Foods like ginger, onion, garlic, cumin seeds, fenugreek seeds, fennel seeds, dhals, curry leaves, coriander leaves etc have been recommended in Ayurveda and can continue to be included
8. Include a workout program that includes Yoga (after you check this out with your Medical Provider) everyday or at least 3-4 times a week.

There are references at the end of almost every chapter that can give you additional information. We have also tried to include some translations at the end. A useful reference to keep is the number to the American Dietetic Association (800-877-1600) or the e-mail address ([www.eatright.org](http://www.eatright.org)). This organization can direct you to resources and qualified professionals to help you empower yourself with helpful information on eating and on how to manage your diabetes and blood glucose levels.

*More Information on Body Mass Risk Assessment and Physical Activity see chapter 16 of this book entitled “Achieving a healthy body weight and exercise interventions to the prevention and management of Type 2 diabetes” by Dr. Wahida Karmally.*

### Key Recommendations (From the Expert Panel on the Identification, Evaluation, and Treatment of Overweight and Obesity in Adults)

Weight loss is advised to lower elevated blood pressure in overweight and obese persons with high blood pressure. Weight loss is also suggested to



lower elevated levels of total cholesterol, LDL-cholesterol, and triglycerides, and to raise low levels of HDL-cholesterol in overweight and obese persons with dyslipidemia. Weight loss is effective to lower elevated blood glucose levels in overweight and obese persons with type 2 diabetes. Use the BMI to assess overweight and obesity. Body weight alone can be used to follow weight loss, and to determine the effectiveness of therapy. The BMI to classify excess weight and obesity and to estimate relative risk of disease compared to normal weight. The waist circumference should be used to assess abdominal fat content. The initial goal of weight loss therapy should be to reduce body weight by about 10 percent from baseline. With success (and if warranted), further weight loss can be attempted. Weight loss should be about 1 to 2 pounds per week for a period of 6 months, with the subsequent strategy based on the amount of weight lost. Low calorie diets (LCD) for weight loss in overweight and obese persons. Reducing fat as part of an LCD is a practical way to reduce calories. Reducing dietary fat alone without reducing calories is not sufficient for weight loss. However, reducing dietary fat, along with reducing dietary carbohydrates, can help reduce calories. A diet that is individually planned to help create a deficit of 500 to 1,000 kcal/day should be an integral part of any program aimed at achieving a weight loss of 1 to 2 pounds per week. Physical activity should be part of a comprehensive weight loss therapy and weight control program because it: (1) modestly contributes to weight loss in overweight and obese adults, (2) may decrease abdominal fat, (3) increases cardio respiratory fitness, and (4) may help with maintenance of weight loss. Physical activity should be an integral part of weight loss therapy and weight maintenance. Initially, moderate levels of physical activity for 30 to 45 minutes, 3 to 5 days a week, should be encouraged. All adults should set a long-term goal to accumulate at least 30 minutes or more of moderate-intensity physical activity on most, and preferably all, days of the week. The combination of a reduced calorie diet and increased physical activity is recommended since it produces weight

loss that may also result in decreases in abdominal fat and increases in cardio respiratory fitness. Behavior therapy is a useful adjunct when incorporated into treatment for weight loss and weight maintenance. Weight loss and weight maintenance therapy should employ the combination of LCD's, increased physical activity, and behavior therapy. After successful weight loss, the likelihood of weight loss maintenance is enhanced by a program consisting of dietary therapy, physical activity, and behavior therapy which should be continued indefinitely. Drug therapy can also be used. However, drug safety and efficacy beyond 1 year of total treatment have not been established. A weight maintenance program should be a priority after the initial 6 months of weight loss therapy.

### **Assessing Your Risk**

According to the NHLBI guidelines, assessment of overweight involves using three key measures:

- **Body Mass Index (BMI)**
- **Waist Circumference, and**
- **Risk factors for diseases and conditions associated with obesity.**

The BMI is a measure of your weight relative to your height and waist circumference measures abdominal fat. Combining these with information about your additional risk factors yields your risk for developing obesity-associated diseases.

BMI is a reliable indicator of total body fat, which is related to the risk of disease and death. The score is valid for both men and women but it does have some limits. The **limits** are:

- It may **overestimate** body fat in athletes and others who have a muscular build.
- It may **underestimate** body fat in older persons and others who have lost muscle mass.

Use the BMI calculator shown in Chapter 16 to estimate your total body fat.

*Summary*

Determine your waist circumference by placing a measuring tape snugly around your waist. It is a good indicator of your abdominal fat which is another predictor of your risk for developing risk factors for heart disease and other diseases. This risk increases with a waist measurement of over 35 inches or 90 cm in men and over 31 inches or 80 cm in women.

Besides being overweight or obese, there are additional risk factors to consider are as follows: high blood pressure (hypertension), high LDL-cholesterol ("bad" cholesterol), low HDL-cholesterol ("good" cholesterol), high triglycerides, high blood glucose (sugar), and family history of premature heart disease, physical inactivity, and cigarette smoking

For people who are considered obese and have two or more risk factors, the guidelines recommend weight loss. Even a small weight loss (just 10 percent of your current weight) will help to lower your risk of developing diseases associated with obesity. Patients, who are overweight, do not have a high waist measurement, and have less than 2 risk factors may need to prevent further weight gain rather than lose weight.

Talk to your doctor to see if you are at an increased risk and if you should lose weight. Your doctor will evaluate your BMI, waist measurement, and others risk factors for heart disease. People who are overweight or obese have a greater chance of developing high blood pressure, high blood cholesterol or other lipid disorders, type 2 diabetes, heart disease, stroke, and certain cancers, and even a small weight loss (just 10 percent of your current weight) will help to lower your risk of developing those diseases.

**Guide to Physical Activity**

An increase in physical activity is an important part of your weight management program. Most weight loss occurs because of decreased caloric intake. Sustained physical activity is most helpful in the

prevention of weight regain. In addition, exercise has a benefit of reducing risks of cardiovascular disease and diabetes, beyond that produced by weight reduction alone. Starts exercising slowly and gradually increase the intensity. Trying too hard at first can lead to injury.

<b>Examples of moderate amounts of physical activity</b>	
<b>Common Chores</b>	<b>Sporting Activities</b>
Washing and waxing a car for 45-60 minutes	Playing volleyball for 45-60 minutes
Washing windows or floors for 45-60 minutes	Playing touch football for 45 minutes
Gardening for 30-45 minutes	Walking 1¾ miles in 35 minute (20min/mile)
Wheeling self in wheelchair 30-40 minutes	Basketball (shooting baskets) 30 minutes
Pushing a stroller 1½ miles in 30 minutes	Bicycling 5 miles in 30 minutes
Raking leaves for 30 minutes	Dancing fast (social) for 30 minutes
Walking 2 miles in 30 minutes (15min/mile)	Water aerobics for 30 minutes
Shoveling snow for 15 minutes	Swimming Laps for 20 minutes
Stair walking for 15 minutes	Basketball (playing game) for 15-20 minutes
	Bicycling 4 miles in 15 minutes
	Jumping rope for 15 minutes
	Running 1½ miles in 15 min. (10min/mile)

Your exercise can be done all at one time, or intermittently over the day. Initial activities may be walking or swimming at a slow pace. You can start out by walking 30 minutes for three days a week and

can build to 45 minutes of more intense walking, at least five days a week. With this regimen, you can burn 100 to 200 calories more per day. All adults should set a long-term goal to accumulate at least 30 minutes or more of moderate-intensity physical activity on most, and preferably all, days of the week. This regimen can be adapted to other forms of physical activity, but walking is particularly attractive because of its safety and accessibility. Also, try to increase "every day" activity such as taking the stairs instead of the elevator. Reducing sedentary time is a good strategy to increase activity by undertaking frequent, less strenuous activities. With time, you may be able to engage in more strenuous activities. Competitive sports, such as tennis and volleyball, can provide an enjoyable form of exercise for many, but care must be taken to avoid injury.

### **Activity Progression**

For the beginner, activity level can begin at very light and would include an increase in standing activities, special chores like room painting, pushing a wheelchair, yard work, ironing, cooking, and playing a musical instrument.

The next level would be light activity such as slow walking of 24 min/mile, garage work, carpentry, house cleaning, childcare, golf, sailing, and recreational table tennis.

The next level would be moderate activity such as walking 15 minute/mile, weeding and hoeing a garden, carrying a load, cycling, skiing, tennis, and dancing.

High activity would include walking 10 minute/mile or walking with load uphill, tree felling, heavy manual digging, basketball, climbing, or soccer/kick ball.

You may also want to try:

- flexibility exercise to attain full range of joint motion
- strength or resistance exercise
- aerobic conditioning

[http://www.nhlbi.nih.gov/health/public/heart/obesity/lose\\_wt/phy\\_act.htm](http://www.nhlbi.nih.gov/health/public/heart/obesity/lose_wt/phy_act.htm)

Body Mass Index, Assessing your Risk and Guide to Physical Activity: "Source: National Heart, Lung, and Blood Institute".

Some Important links:

<http://www.nhlbisupport.com/bmi/>

[www.va.gov/diabetes](http://www.va.gov/diabetes)

<http://www.hhs.gov/topics/diabetes.html>

<http://ndep.nih.gov/>

<http://www.diabetes.org/main/application/commercewf>

<http://www.diabetesnet.com/>

<http://www.aadenet.org/>

<http://www.joslin.harvard.edu/education/library/index.shtml>

<http://www.eatright.org/>

There are six Appendices at the end of the book. Appendix 1 gives a gestational meal plan with vegetarian and non-vegetarian foods from the different food groups. The health of the fetus and mother is very sensitive to the amount of glucose in blood. Acceptable target levels will have to be established in consultation with your Medical Provider and a Registered Dietitian can help you design your eating pattern with foods that suit your preferences and still stay within established macronutrient ranges. But every prenatal woman should inform herself of the benefits of breastfeeding for her own health, the health of her baby and for the ramifications of the metabolic syndrome. Breastfeeding has been shown to help the new mother lose the excess weight gained during pregnancy besides bestowing many other benefits such as the prevention of certain types of cancers both in the mother and the baby as well as

## *Summary*

contributing to an increase the newborn's immunity, brain growth and help with overall physiological and psychological health. For more information, contact [ilca.org](http://ilca.org).

Appendix 2 is Diabetes Numbers at a Glance provided by the National Diabetes Education Program (NDEP). Appendix 3 is a Diabetes Mellitus Reference Pocket Card for use either by physicians or as a self-education tool by patients under the supervision of a Medical Provider.

Appendix 4 provides information on the require4s screening, immunization and counseling preventive services recommended for normal-risk adults and Appendix 5 is a Glossary of terms used in this book to help the reader. Appendix 6 is a 4-sided handout in English and several Indian languages that can be given to the patient as part of a patient self-education program for blood glucose and health management. There are references at the end of almost every

chapter that can give you additional information. A useful reference to keep is the number to the American Dietetic Association (800-877-1600) or the e-mail address ([www.eatright.org](http://www.eatright.org)). This organization can direct you to resources and qualified professionals.

Readers of this book must be aware that the protocols used in this book regarding blood pressure, blood lipids and blood glucose levels are current as of 2011 and every individual must consult his/her Physician before implementing the information about target levels from this book.

**Padmini Balagopal, PhD, RD, CDE, IBCLC is a Nutrition Consultant and a current board member of the International Board of Certified Lactation Examiners (IBLCE). She is active in the fields of diabetes prevention, management, lactation practice, and training in United States and India. Contact information [velchet2@gmail.com](mailto:velchet2@gmail.com).**

**Body Mass Index Table**

Height (inches)	Normal								Overweight								Obese								Extreme Obesity											
	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54
<b>BMI</b>	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54
<b>Body Weight (pounds)</b>																																				
58	91	96	100	105	110	115	119	124	129	134	138	143	148	153	158	162	167	172	177	181	186	191	196	201	205	210	215	220	224	229	234	239	244	248	253	258
59	94	99	104	109	114	119	124	128	133	138	143	148	153	158	163	168	173	178	183	188	193	198	203	208	212	217	222	227	232	237	242	247	252	257	262	267
60	97	102	107	112	118	123	128	133	138	143	148	153	158	163	168	174	179	184	189	194	199	204	209	215	220	225	230	235	240	245	250	255	261	266	271	276
61	100	106	111	116	122	127	132	137	143	148	153	158	164	169	174	180	185	190	195	201	206	211	217	222	227	232	238	243	248	254	259	264	269	275	280	285
62	104	109	115	120	126	131	136	142	147	153	158	164	169	175	180	186	191	196	202	207	213	218	224	229	235	240	246	251	256	262	267	273	278	284	289	295
63	107	113	118	124	130	135	141	146	152	158	163	169	175	180	186	191	197	203	208	214	220	225	231	237	242	248	254	259	265	270	278	282	287	293	299	304
64	110	116	122	128	134	140	145	151	157	163	169	174	180	186	192	197	204	209	215	221	227	232	238	244	250	256	262	267	273	279	285	291	296	302	308	314
65	114	120	126	132	138	144	150	156	162	168	174	180	186	192	198	204	210	216	222	228	234	240	246	252	258	264	270	276	282	288	294	300	306	312	318	324
66	118	124	130	136	142	148	155	161	167	173	179	186	192	198	204	210	216	223	229	235	241	247	253	260	266	272	278	284	291	297	303	309	315	322	328	334
67	121	127	134	140	146	153	159	166	172	178	185	191	198	204	211	217	223	230	236	242	249	255	261	268	274	280	287	293	299	306	312	319	325	331	338	344
68	125	131	138	144	151	158	164	171	177	184	190	197	203	210	216	223	230	236	243	249	256	262	269	276	282	289	295	302	308	315	322	328	335	341	348	354
69	128	135	142	149	155	162	169	176	182	189	196	203	209	216	223	230	236	243	250	257	263	270	277	284	291	297	304	311	318	324	331	338	345	351	358	365
70	132	139	146	153	160	167	174	181	188	195	202	209	216	222	229	236	243	250	257	264	271	278	285	292	299	306	313	320	327	334	341	348	355	362	369	376
71	136	143	150	157	165	172	179	186	193	200	208	215	222	229	236	243	250	257	265	272	279	286	293	301	308	315	322	329	338	343	351	358	365	372	379	386
72	140	147	154	162	169	177	184	191	199	206	213	221	228	235	242	250	258	265	272	279	287	294	302	309	316	324	331	338	346	353	361	368	375	383	390	397
73	144	151	159	166	174	182	189	197	204	212	219	227	235	242	250	257	265	272	280	288	295	302	310	318	325	333	340	348	355	363	371	378	386	393	401	408
74	148	155	163	171	179	186	194	202	210	218	225	233	241	249	256	264	272	280	287	295	303	311	319	326	334	342	350	358	365	373	381	389	396	404	412	420
75	152	160	168	176	184	192	200	208	216	224	232	240	248	256	264	272	279	287	295	303	311	319	327	335	343	351	359	367	375	383	391	399	407	415	423	431
76	156	164	172	180	189	197	205	213	221	230	238	246	254	263	271	279	287	295	304	312	320	328	336	344	353	361	369	377	385	394	402	410	418	426	435	443

Source: Adapted from *Clinical Guidelines on the Identification, Evaluation, and Treatment of Overweight and Obesity in Adults: The Evidence Report*.

For specific definition for Asian Indians, please see page 84

# Appendix 1

## Gestational Diabetes Sample Meal Plan

Sharmila Chatterjee, MSc, MS, RD, CDE

Meal/Time	Meal Plan Number of Food Choices Group	Menu Ideas for the Vegetarian Indian	Menu Ideas for the Non-Vegetarian Indian
<b>Breakfast 8am</b>	1-2 Protein as desired Vegetables 1 Starch as desired Fat	1 cup paneer jalfrezi with 1 cup bell peppers, onions, 1 roti or chapati	1 egg omelet 1 cup non starchy vegetables 1 roti or chapati
<b>Snack 11am</b>	1 Protein 1 Starch as desired Vegetables as desired Fat	1oz soy nuts ½ cup moong beans sprout	1 oz string cheese ¾ oz whole wheat crackers
<b>Lunch 1 pm</b>	3-4 Protein as desired Vegetables 2 Starch 1 Milk as desired Fat	1 cup of tofu curry 1 cup spinach sabji 2 rotis or chapati ¾ cup non fat yogurt/curd	1 cup chicken curry 1 cup okra sabji 2 rotis or chapati 1 cup non fat milk
<b>Snack 4 pm</b>	1 Protein 1 Starch 1 Fruit As desired Fat	1oz mixed nuts 1 ½ cup puffed rice 1 small mango	20 small peanuts 1 cup poha (rice flakes) 1 small pear
<b>Dinner 7 pm</b>	3-4 Protein as desired Vegetables 3 Starch as desired Fat	1 cup ground soy curry 1 cup cabbage sabji 2 rotis or chapati + ½ cup dhal	1 cup mutton curry 1 cup cauliflower sabji 3 rotis or chapati
<b>Snack 10 pm</b>	1 Milk 1 Fruit or Starch 1 Protein	1 cup non fat milk 1 small apple or 6 saltine crackers 1Tbsp peanut/almond butter	1 cup plain lassi (no sugar added) 1 ¼ cup strawberries or ¾ oz pretzels ¼ cup cottage cheese

\*\*\*Remember to include 8-10 glasses of water throughout each day\*\*\*

*Indian Foods: AAPI's Guide to Nutrition, Health and Diabetes*

Please consider potato, peas, and corn as starch but not sabji (dry prepared vegetables without gravy/curry)

Adapted with permission from the California Department of Public Health, California Diabetes and Pregnancy Program website: "Asian Indian

Food Pyramid for Gestational Diabetes" by Sharmila Chatterjee and Geetha Desai and the California Diabetes and Pregnancy Program, October 2006.

Funding for the development of this material was provided by the federal Title V block grant from the California Maternal, Child and Adolescent Health Division.

# Appendix 2

## Diabetes Numbers At-a-Glance

National Diabetes Education Program (NDEP)

### NATIONAL DIABETES EDUCATION PROGRAM (NDEP) **Diabetes** Numbers At-a-Glance 2011<sup>1</sup> For non-pregnant adults

#### Criteria for Diagnosis of Diabetes\*

- (1) A1C<sup>††</sup>  $\geq$  6.5% or
- (2) Fasting plasma glucose  $\geq$  126 mg/dL or
- (3) 2-hr plasma glucose  $\geq$  200 mg/dL post 75g oral glucose challenge or
- (4) Random plasma glucose  $\geq$  200 mg/dL with symptoms (polyuria, polydipsia, and unexplained weight loss)

\*For criteria 1-3, repeat test to confirm unless symptoms are present. It is preferable that the same test be repeated for confirmation. If two different tests are used (e.g., FPG and A1C) and both indicate diabetes, consider the diagnosis confirmed. If the two different tests are discordant, repeat the test above the diagnostic cut point.

#### Criteria for Pre-diabetes\*\*

- (1) Fasting plasma glucose 100 – 125 mg/dL [Impaired fasting glucose (IFG)] or
- (2) 2-hr post 75g oral glucose challenge 140 – 199 mg/dL [Impaired glucose tolerance (IGT)] or
- (3) A1C<sup>††</sup> 5.7% – 6.4%

\*\*For all tests, risk of diabetes is continuous, extending below the lower limit of the range and becoming disproportionately greater at higher ends of the range.

#### Treatment Goals: the ABCs of Diabetes\*\*\*

##### A1C<sup>††</sup> < 7% for many people

Preprandial capillary plasma glucose 70 – 130 mg/dL  
Peak postprandial capillary plasma glucose < 180 mg/dL  
(usually 1 to 2 hr after the start of a meal)

##### Blood pressure (mmHg)

Systolic < 130 for most people  
Diastolic < 80

##### Cholesterol – Lipid Profile (mg/dL)

LDL Cholesterol < 100  
HDL Cholesterol Men > 40, Women > 50  
Triglycerides < 150

##### \*\*\*Individualize target levels. For example, consider:

- A1C target as close to normal as possible without significant hypoglycemia in people with short duration of diabetes, little comorbidity, and long life expectancy.
  - Less stringent A1C target for people with severe hypoglycemia, limited life expectancy, extensive comorbid conditions, advanced complications, or longstanding diabetes where the general goal is difficult to attain despite optimal efforts.
  - Higher or lower systolic blood pressure targets maybe appropriate based on patient characteristics and response to therapy.
- See source materials for treatment recommendations.

<sup>1</sup> While utilizing American Diabetes Association Standards of Medical Care in Diabetes Care 24 (Suppl 2): S11-S61, 2011, NDEP recognizes that guidelines from other groups may vary, reflecting the limitations and complexity of the evidence base.

<sup>††</sup> A1C testing for diagnostic purposes should be performed in a laboratory using a method that is NGSP certified. Tests of non-A1C tests should not be used for diagnosis. Be alert to the impact of hemoglobin variants on A1C values. See [www1.nidk.nih.gov](http://www1.nidk.nih.gov) for information.

### Diabetes Management Schedule

Adults with diabetes should receive medical care from a physician-coordinated team of health care professionals. Referrals to team members should be made as appropriate.

#### At each regular diabetes visit:

- Measure weight and blood pressure.
- Inspect feet if one or more high-risk foot conditions are present.
- Review self-monitoring glucose record.
- Review/adjust medications to control glucose, blood pressure, and lipids. Consider regular use of low-dose aspirin for CVD prevention as appropriate.
- Review self-management skills, dietary needs, and physical activity.
- Assess for depression or other mood disorder.
- Counsel on smoking cessation and alcohol use.

#### Quarterly:

- Obtain A1C in patients whose therapy has changed or who are not meeting glycemic goals (twice a year if at goal with stable glycemia).

#### Annually:

- Obtain fasting lipid profile (every 2 years if patient has low-risk lipid values).
- Obtain serum creatinine to estimate glomerular filtration rate and stage the level of chronic kidney disease.
- Perform urine test for albumin-to-creatinine ratio in patients with type 1 diabetes > 5 years and in all patients with type 2 diabetes.
- Refer for dilated eye exam (if normal, an eye care specialist may advise an exam every 2–3 years).
- Perform comprehensive foot exam.
- Refer for dental/oral exam at least once a year.
- Administer influenza vaccination.
- Review need for other preventive care or treatment.

#### Lifetime:

- Administer pneumococcal vaccination (repeat if over age 64 or immunocompromised and last vaccination was more than 5 years ago).



To order NDEP materials visit  
[www.YourDiabetesInfo.org](http://www.YourDiabetesInfo.org) or call  
1-888-693-NDEP (1-888-693-6337).



The US Department of Health and Human Services' National Diabetes Education Program (NDEP) is jointly sponsored by the National Institutes of Health (NIH) and the Centers for Disease Control and Prevention (CDC) with the support of more than 200 partner organizations.

Updated March 2011

NDEP 11



# Appendix 3

## Diabetes Mellitus Pocket Reference Card

Ritesh Gupta, Anoop Misra, Shashank Joshi, Banshi Saboo, TG Patel

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TREATMENT OF ASSOCIATED CONDITIONS	
<b>Hypertension</b>	<ul style="list-style-type: none"> <li>• Goal: 130/80mmHg</li> <li>• Angiotensinogen Converting Enzyme (ACE) inhibitors and Angiotensin Receptor Blockers (ARB) are preferred drugs.</li> </ul>
<b>Dyslipidemia</b>	<p><b>Goals:</b></p> <ul style="list-style-type: none"> <li>• LDL Cholesterol &lt; 100mg/dl without overt cardiovascular disease (CVD) and &lt; 70 mg/dl with overt CVD</li> <li>• Triglycerides &lt; 150 mg/dl</li> <li>• HDL Cholesterol &gt; 40 in men and &gt; 50 in women</li> </ul> <p>Statin therapy should be added irrespective of basal lipid levels for those with overt CVD or those without overt CVD above the age of 40 years and with one or more other CVD risk factors</p>
<b>Addition of Anti-platelet drugs</b>	<ul style="list-style-type: none"> <li>• Aspirin 75mg in men more than 50 years and women more than 60 years of age, unless contraindicated</li> </ul>
<b>Smoking Cessation</b>	<p>All patients should be advised not to smoke. Smoking Cessation counseling and other therapies should be initiated.</p>
<b>Foot Care</b>	<ul style="list-style-type: none"> <li>• General foot self-care and education in all patients including advice on proper footwear</li> <li>• Comprehensive foot examination including inspection, assessment of foot pulses, testing for loss of protective sensation (10 g 5W monofilament, vibration using 128Hz tuning fork and ankle reflexes)</li> </ul>

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GUIDELINES FOR EXERCISE PRESCRIPTION
<ul style="list-style-type: none"> <li>• In general, a total of 60 minutes of physical activity is recommended every day, this includes aerobic activity (30-45 minutes brisk walk), work-related activity and muscle strengthening activity (10-15 minutes).</li> <li>• Brisk walking (walking at an intensity wherein an individual finds speaking difficult but not impossible) is preferred initial mode of exercise as this does not require any special training or equipment.</li> <li>• Physical activity can be accumulated throughout the day in blocks as short as 10 minutes. Work-related activity should be encouraged wherever possible.</li> <li>• There is a dose-response relationship between physical activity and health, greater benefit is derived by exceeding minimum recommendations. For additional and more extensive health benefits, adults can increase their aerobic physical activity to 300 minutes (5 hours) a week of moderate-intensity (brisk walking, stair climbing, jogging, swimming, treadmill or cycling), or 150 minutes a week of vigorous-intensity aerobic physical activity (football, badminton, basketball, running, rope jumping or dancing).</li> <li>• A pre-exercise stress test may be needed in some patients. Certain types of exercise may be contraindicated in conditions like uncontrolled hypertension, severe autonomic neuropathy, severe peripheral neuropathy, history of foot lesions, and advanced retinopathy.</li> </ul>
<p>Misra et al. Consensus Statement for Diagnosis of Obesity, Abdominal Obesity and the Metabolic Syndrome for Asian Indians and Recommendations for Physical Activity, Medical and Surgical Management. <i>BMJ</i>. 2010;341:b3170. The definitions of obesity and metabolic syndrome can also be referred to from here.</p>

Page 1

### DIAGNOSIS AND MANAGEMENT OF DIABETES MELLITUS: A POCKET REFERENCE CARD FOR PHYSICIANS

Ritesh Gupta, Anoop Misra, Shashank Joshi, Banshi Saboo, TG Patel  
 Advisors: Sundar Madhavan, Vijay Varmaathan, Mohan Mallam, Jayesh B Shah, V Janga, Anuj Bhargava, Rakesh Pawar, Arvind Gupta, Shashank Joshi, Ramesh F Shah, Priya Shivaprasanna, Shilpa Joshi, Neha Gupta

As finalized in Global Healthcare Summit, January 2011 by Indo-US Specialist Diabetes Group, with the support of American Association of Physicians of Indian Origin, revised January 2011

### Screening for Diabetes Mellitus

- Age > 75 years regardless of BMI
- Age 15-75 years, overweight (BMI > 25) and/or abdominal obesity (waist circumference > 90 cm in males and > 80 cm in females) with one of the following:
  1. Physical inactivity or sedentary lifestyle
  2. Family history of diabetes
  3. History of Cardiovascular disease
  4. Hypertension
  5. Dyslipidemia
  6. Women with history of giving birth to a child more than 4 kg or OGTT
  7. Polycystic ovary syndrome
  8. Clinical markers of insulin resistance like acanthosis nigricans, buffalo hump or double chin
  9. History of low birth weight or early 'catch-up obesity' in childhood

Screening should be done at least once in 3 years, and more frequently depending on the risk factors.

*Disclaimer: The information given here is general and evidence based and is relevant to Indian context. For an uncontrollable situation, or for further detailed information, standard textbooks should be referred to and/or specialist diabetologist should be consulted.*

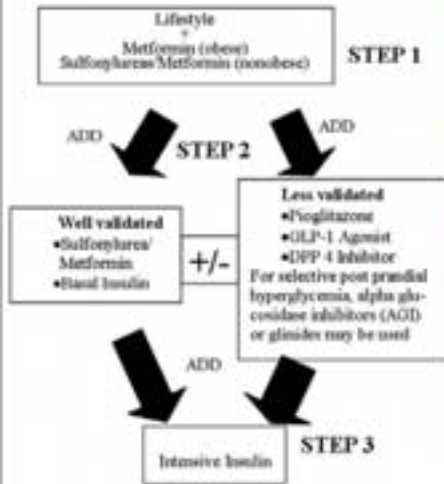
DIAGNOSIS OF DIABETES MELLITUS (FOR NON-PREGNANT PEOPLE)		
	Fasting Plasma Glucose (mg/dL)	Post Glucose Load* Plasma Glucose (mg/dL)
Normal	<100	<140
Pre-diabetic	100-125	140-199
Diabetic	≥126	≥200

\* 2 hours after 75 gram glucose load. The test must be repeated a few days later.

TARGETS OF GLYCEMIC CONTROL	
HbA1c	%
Fasting blood glucose (mg/dL)	80-130 mg/dL
Post Meal Blood glucose (mg/dL)	120-180 mg/dL

\* Targets may be relaxed for elderly (over 65 years) and in those with comorbid conditions.

**TREATMENT ALGORITHM**



	KEY BENEFITS AND RISKS OF ANTIDIABETIC MEDICATIONS								
	Metformin	Sulfonylurea	Insulin	Praglitinone	ACE	ARB	DPP4 Inhibitor	GLP-1 Agonist	
PPG lowering	Moderate	Moderate	Moderate	Moderate	None	Mild	Mild	Mild	Mild
PP Glucose lowering	Mild	Moderate	Moderate	Mild	Moderate	Moderate	Moderate	Moderate	Moderate
Hypoglycemia	None	Mild to Moderate	Moderate to severe	None	None	Mild	None	None	None
CV risk effects	Moderate	None	None	None	None	Moderate	None	Mild	Moderate
Weight control/dyslipidemia	Can track control	None	Preferential	Can be used	Can be used	Can be used	None	Can be used	None
Weight BWB fatness	Can track control	Can be used	Preferential	Can track control	Can be used	Can track control	None	None	None
Heart failure-risk	Can track control w/CCB	Can be used	Can be used	Can track control	Can be used	Can be used	None	None	None
Weight gain	Weight loss	Mild gain	Moderate gain	Moderate gain	Neutral gain	Mild gain	Neutral gain	Weight loss	Weight loss
CV risk burden	Can be used	None	Preferential	Can be used	Can be used	Can be used	None	Can be used	None

EARLY DETECTION OF DIABETIC NEPHROPATHY		
	Microalbuminuria (mg/L)	Urine Albumin Creatinine Ratio (mg/mg creatinine)
Normal	<20	<30
Microalbuminuria	20-199	30-299
Macroalbuminuria	≥200	≥300

- Components of Comprehensive Diabetes Education**
- Medical nutrition therapy
  - Physical activity and exercise
  - Maintain Body Mass Index less than 25 kg/m<sup>2</sup>
  - Self-Monitoring of Blood Glucose (SMBG)
  - Insulin storage, injection technique and sites
  - Education about Hypoglycemia
  - Advice regarding anti-diabetic therapy during sickness, fasting, travel etc.
  - Education about foot care

- FOLLOW UP**
- Review of SMBG data
  - HbA1c every 3-6 months
  - Blood pressure record at every visit
  - Lipid profile every year\*
  - Screening for complications
    1. Microalbuminuria and serum creatinine every year\*
    2. Eye examination for diabetic retinopathy every year\*
    3. Foot examination including foot pulses and testing for vibration and Semmes Weinstein (SW) monofilament every year\*
    4. Clinical screening for coronary artery disease, peripheral vascular disease and ECG every year. Ankle Brachial Index (ABI) should be done wherever possible
  - Screening for adverse drug reactions
- \* The frequency of screening mentioned here is for patients in whom no abnormality is found. More frequent screening may be required for abnormal test results.

## Appendix 4

# Clinical Preventive Services for Normal-Risk Adults

Recommended by the U.S. Preventive Services Task Force

Test or Disorder	Population, <sup>a</sup> Years	Frequency
Blood pressure, height and weight	>18	Periodically
Cholesterol	Men > 35 Women > 45	Every 5 years Every 5 years
Diabetes	>45 or earlier, if there are additional risk factors	Every 3 years
Pap smear <sup>b</sup>	Within 3 years of onset of sexual activity or 21-65	Every 1-3 years
<i>Chlamydia</i>	Women 18-25	Every 1-2 years
Mammography <sup>a</sup>	Women > 40	Every 1-2 years
Colorectal cancer <sup>a</sup>	>50	
▪ fecal occult blood and/or		Every year
▪ sigmoidoscopy or		Every 5 years
▪ colonoscopy		Every 10 years
Osteoporosis	Women > 65; >60 at risk	Periodically
Abdominal aortic aneurysm (ultrasound)	Men 65-75 who have ever smoked	Once
Alcohol use	>18	Periodically

*Clinical Preventive Services for Normal-Risk Adults*

Vision, hearing	>65	Periodically
Adult immunization		
▪ Tetanus-diphtheria (Td)	>18	Every 10 years
▪ Varicella (VZV)	Susceptibles only, >18	Two doses
▪ Measles, mumps, rubella (MMR)	Women, childbearing age	One dose
▪ Pneumococcal	>65	One dose
▪ Influenza	>50	Yearly
▪ Human papillomavirus (HPV)	Up to age 26	If not done prior
<p><sup>a</sup> Screening is performed earlier and more frequently when there is a strong family history. Randomized, controlled trials have documented that fecal occult blood testing (FOBT) confers a 15 to 30% reduction in colon cancer mortality. Although randomized trials have not been performed for sigmoidoscopy or colonoscopy, well-designed case-control studies suggest similar or greater efficacy relative to FOBT.</p> <p><sup>b</sup> In the future, Pap smear frequency may be influenced by HPV testing and the HPV vaccine.</p> <p><b>Note:</b> Prostate-specific antigen (PSA) testing is capable of enhancing the detection of early-stage prostate cancer, but evidence is inconclusive that it improves health</p>		

# Appendix 5

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## Glossary

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Theja Mahalingaiah, MA, RD & Nirmala Abraham, MS, RD

**Alcohol** - An ingredient in a variety of beverages, including beer, wine, liqueurs, cordials, and mixed or straight drinks. Pure alcohol itself yields about 7 calories per gram.

**Blood Glucose**- The main sugar that the body makes from the three elements of food - proteins, fats, and carbohydrates - but mostly from carbohydrates. Glucose is the major source of energy for living cells and is carried to each cell through the bloodstream. However, the cells cannot use glucose without the help of insulin.

**Bennecol** - A type of plant based margarine that helps lower blood cholesterol level.

**Body mass index (BMI)**- a method of determining by the relationship between height and weight whether or not a person is obese, overweight, underweight or of normal weight.

**Calorie**- A unit used to express the heat or energy value of food. Calories come from carbohydrate, protein, fat, and alcohol.

**Carbohydrate**- One of the three major energy sources in foods. The most common carbohydrates are sugars and starches. Carbohydrates are found in foods from the Milk, Vegetable, Fruit and Starch exchange lists.

**Carbohydrate counting** - method of meal planning approach for people with diabetes that involves calculating the number of grams of carbohydrate, or choices of carbohydrate, eaten at meals or snacks.

**C.D.E. (Certified Diabetes Educator)**- A health care professional who is qualified by the American Association of Diabetes Educators to teach people with diabetes how to manage their condition. The health care team for diabetes should include a diabetes educator, preferably a C.D.E.

**Cholesterol**- A fat-like substance normally found in blood. A high level of cholesterol in the blood has been shown to be a major risk factor for developing heart disease. Dietary cholesterol is found in all and only animal products, but is especially high in egg yolks and organ meats. But saturated fats and oils that can also contribute to heart disease is found in both animal and some plant products. Eating foods high in dietary cholesterol and saturated fat tends to raise the level of blood cholesterol. Foods of plant origin such as fruits, vegetables, grains, and beans, peas, and lentils contain no cholesterol. Cholesterol is found in foods from the Milk, Meat, and Fat exchange lists.

**Chronic**- Present over a long period of time. Diabetes is an example of chronic disease.

**Dietitian**- A registered dietitian (RD) is recognized by the medical profession as the primary provider of nutritional care, education, and counseling. The initials RD after a dietitian's name ensure that he or she has met the standards of The American Dietetic Association. Look for these credentials when you seek advice on nutrition.

**Exchange lists** - A grouping of foods by type to help people on special diets stay on the diet. Each group lists measured amounts of foods within the group

that may be exchanged or traded in planning meals. A single exchange contains approximately equal amounts of carbohydrate, protein, fat, and calories.

**Fasting blood glucose test-** A method for finding out how much glucose (sugar) is in the blood. The test can show if the person has diabetes. A blood sample is taken in lab or doctor's office. The test is usually done in the morning before the person has eaten.

**Fat-** One of the three major energy sources in food. A concentrated source of calories- about 9 calories per gram. Fat is found in foods from the Fat and Meat lists. Some kinds of milk also have fat; some foods from the Starch list also contain fat.

**\*Saturated fat-** Type of fat that tends to raise blood cholesterol levels. It comes primarily from animals and is usually hard at room temperature. Examples of saturated fats are butter, lard, meat fat, solid shortening, palm oil, and coconut oil.

**\*Polyunsaturated fat-** Type of fat this is liquid at room temperature and is found in vegetable oils. Safflower, sunflower, corn, and soybean oils contain the highest amounts of polyunsaturated fats. Polyunsaturated fats, such as corn oil, can help lower high blood cholesterol levels when they are part of a healthful diet.

**\*Monounsaturated fat-** Type of fat that is liquid at room temperature and is found in vegetable oils, such as canola and olive oils. Monounsaturated fats can help lower high blood cholesterol levels when they are part of a lower-fat diet.

**Fiber-** An indigestible part of certain foods. Fiber is important in the diet as roughage, or bulk. Fiber is found in foods from the Starch, Vegetable, and Fruit exchange lists.

**Gestational diabetes mellitus (GDM)-** a type of *diabetes* that develops only during pregnancy and usually disappears upon delivery, but increases the mother's risk of developing diabetes later in life.

GDM is managed with meal planning, physical activity, and, in some cases, medication.

**Gram-** a unit of weight in the metric system. An ounce equals 28 grams. In some meal plans for people with *diabetes*, the suggested amounts of food are given in grams.

**Lipid-** A term for fat. The body stores fat as energy for future use just like a car that has a reserve fuel tank. When the body needs energy, it can break down the lipids into fatty acids and burn them like glucose (sugar).

**Meal Plan-** A guide showing the number of food exchanges to use in each meal and snack to control distribution of carbohydrates, proteins, fats, and calories throughout the day.

**Mineral-** Substance essential in small amounts to build and repair body tissue and/or control functions of the body. Calcium, iron, magnesium, phosphorus, potassium, sodium, and zinc are minerals.

**Non calorie sweetener-** A man made sweetener that people use in place of sugar because it has no calories.

Ex- Saccharin

**Nutrient-** Substance in food necessary for life. Carbohydrates, proteins, fats, minerals, vitamins, and water are nutrients.

**Obesity-** When people have 20 percent (or more) extra body fat for their age, height, sex, and bone structure. Fat works against the action of insulin. Extra body fat is thought to be a risk factor for diabetes.

**Protein-** One of the three major nutrients in food. Protein provides about 4 calories per gram. Protein is found in foods from the Milk and Meat exchange lists. Smaller amounts of protein are found in foods from the Vegetable and Starch lists.

**Sodium-** A mineral needed by the body to maintain life, found mainly as a component of salt. Many individuals need to cut down the amount of sodium (and salt) they eat to help control high blood pressure.

**Starch-** One of the two major types of carbohydrate. Foods consisting mainly of starch come from the Starch list.

**Sugars-** One of the two major types of carbohydrate. Foods consisting mainly of naturally present sugars are those from the Milk, Vegetables, and Fruit lists. Added sugars include common table sugar and the sugar alcohols (sorbitol, mannitol, etc).

**Promise Activa** (formerly known as Take control)- A type of plant based margarine that helps lower blood cholesterol level.

**Tofu** - A protein substitute made with soy beans. Many vegetarian protein alternatives such as Vegetarian burger patties are made with tofu.

**Trans fatty acid** (also called Trans fat)- comes from adding hydrogen to vegetable oil through a process called hydrogenation. Partially hydrogenated oil is another name for Trans fat. Trans fats are more solid than oil is, making them less likely to spoil. Using Trans fats in the manufacturing of foods helps foods stay fresh longer. Commercially processed goods such as crackers, cookies and cakes, Indian savory snacks and many fried foods, may contain Trans fats. Shortenings (e.g. Vanaspathi commonly used in India) and some margarine can be high in Trans fat. Unlike other fats, Trans-fatty acids raise "bad" (LDL) cholesterol and lowers "good" (HDL) cholesterol. A high LDL cholesterol level in combination with a low HDL cholesterol level increases the risk of heart disease, the leading killer of men and women.

**Triglycerides-** Fats normally present in the blood that are made from food. Gaining too much weight or consuming too much fat. Alcohol, or carbohydrates may increase the blood triglycerides.

**Vitamins-** Substances found in food, needed in small amounts to assist in body processes and functions. These include vitamins A, D, E, the B-complex, C, and K.

## PREPARED INDIAN DISHES

### APPETIZERS

- Bhujia - fried lentil snacks.
- Bhel puri - puffed rice mixed with fried snacks and spicy sauce (popular street snack)
- Chiura /Chevda /Chira /Awul - Flattened Rice for Long shelf life / sauteed or fried. Chaat - mixed sweet & savory snack.
- Dahi Vada - Deep fried bean fritters in a yogurt sauce.
- Dhokla -a steamed bread made with fermented chick pea batter.
- Lassi - a yogurt based drink.
- Kachori - Deep fried savory pastry stuffed with lentils.
- Mulligatawny - soup made with lentils and spices.
- Murruku - fried spiral snack.
- Namkeens / Nimki/ Karam - Salty snacks ( spicy at times)-distinct from sweet snacks
- Nimbu paani - a drink similar to lemonade.
- Pakoras - Batter fried vegetables.
- Papad - Baked or fried item that looks like a Large potato chip made with legumes and or rice flour with spices.
- Papad - Baked or fried item that looks like a large potato chip made with legumes and or rice flour with spices.
- Pani puri - mini puri filled with spicy potato & tamarind water ( popular street snack)
- Pav Bhaji - spicy potato served on bread with sauce.
- Puris - Deep fried flat bread made with wheat flour.
- Rasam- Thin soup made with tomatoes, lentils, tamarind (optional) and spices.

## Glossary

- Samosa - Deep fried pastry stuffed with potatoes & other vegetables or meat.
- Sev - Thin fried lentil noodles.
- Vada/ Vadai/Bora - Deep fried savory bean fritters.
- Rogan josh - lamb, goat or chicken dish in spicy sauce.
- Tandoori Chicken - Marinated chicken baked in clay oven.
- Tandoori Fish - Marinated fish baked in clay oven.

### BREADS

- Bathura - fried dough made with all purpose flour.
- Chapathi / Phulka / Roti / Rooti - Flat bread made with wheat flour.
- Idli - Stemed dough made of rice and urad dhal (white lentil).
- Nan - Baked (traditionally in clay oven called Tandoor) bread.
- Paratha - a kind of bread made with all purpose flour.
- Roti - a kind of flat bread made with wheat flour.
- Thepla - a flat bread made with wheat flour, gram flour and spices.
- Uppuma - Cooked cream of wheat with onion, spices and oil.

### ENTREES

- Biriyani - Rice dish made with vegetables; chicken, meat or shrimp.
- Chicken curry - Chicken in spicy sauce.
- Chole - A dish made with chickpeas, onions, tomatoes and spices.
- Kabab - ground lamb baked, grilled or fried.
- Malai Kofta - Cheese and vegetable balls in special sauce.
- Maccher Jhol - Fish curry.
- Palak paneer - A dish made with spinach, cheese and spices.
- Pullao - Rice dish made with spices & or with vegetables; meat.

- **Tikka - boneless marinated meat cooked in spicy sauce.**
- Qua gasa - a dish made with dal patty, fried boiled egg and timur.

### VEGETABLE DISHES

- Dalma - Dhals cooked with vegetables.
- Dhal - Are cooked legumes. Most common dhals are toor, mung etc.,
- Koottu - diced vegetables cooked with dhal and coconut and added spices.
- Palak paneer - A dish made with spinach, cheese and spices.
- Saag -made with mixedgreens such as spinach, mixed greens etc.,
- Shukto - a vegetable stew.
- Sambar - a vegetable curry made with dhal, vegetables, spices & small amount of oil.

### DESSERTS

- Adirasam - deep fried sweet dish made with rice flour.
- Appam - rice/wheat based preparation.
- Barfies -Look like bar cookies made with ghee, milk, nuts etc.
- Gulab Jmoon - A sweet dish soaked in rose flavored sugar syrup.
- Halwa - a sweet made with milk, sugar, ghee etc.
- Jilebi - Fried dish made with chickpea flour and dipped in sugar syrup.



- Kheers - a dessert made by reducing milk and with other ingredients such as vermicelli, rice, almonds etc.,
- Kulfi -a milk based frozen dessert similar to ice cream.
- Laddu - Ball shaped sweet made with chickpea flour, sugar etc.,
- Mahi: buttermilk which can be sweetened with sugar.
- Misti Doi: sweetened yogurt
- Mithai/Misti - Desserts, Sweets.
- **Petha - vegetables preserved in a crystalline sugar medium.**
- Payasam - sweet dish made with milk, sugar, rice or dhal.
- Pedas - A sweet made with milk, ghee and sugar.
- Rosagolla - cheese based, syrupy sweet dish.
- Rasmalai - sweet made with flattened paneer ball soaked in cream sauce flavored with cardamom.
- Sweet Pongal - sweet tasting cooked rice.
- Payasam - sweet dish made with milk, sugar, rice or dhal.
- Pedas - A sweet made with milk, ghee and sugar.
- Pite- Rice flour pancakes immersed in sweetened syrup.
- Rasogolla- Indian cheese balls in sugar syrup
- Sandesh: Indian cheese made with sugar.
- Sweet Pongal - Sweet tasting cooked rice.

### MISSELANEOUS

May be sweet , tart or piquant

- Chai - Tea made with milk.
- Chutneys - Are pureed condiments made with coconut, mango, cilantro, mint, Tamarind and spices.
- Pickles- are condiments which may be sweet, tart or piquant that accompany Indian cuisine.

Lemon and Mango pickles are common among many varieties of pickles.

- Raita/Pacchadi - A meal accompaniment made with yogurt; grated cucumber, green chilies, onions etc.

<b>Measurements and Conversions</b>
1 ounce =30 grams (actual weight 28.35g)
1 fluid ounce =30 millilitres (actual amount 28.35ml)
1 cup = ½ pint = 240 ml = 8 fl ounces
2 cups = 1 pint = 480 ml = 16 fl ounces
2 pints = 1 quart = 960 ml = 32 fl ounces
4 quarts = 1 gallon
1 teaspoon fluid = 5 ml or ⅙ oz
1 tablespoon fluid = 15 ml or ½ oz
1 cup (8 oz) = 16 tablespoons
1 kilogram = 2.2045 pounds (2.2 lb)
1 liter = 1.0567 quarts
1 pound = 453.6 grams
To change pounds to kilograms, multiply by 0.45

### Guide to Ingredients

- All-purpose flour - Maida
- Aniseed - Ajowain or Carum
- Asafoetida - Hing
- Aubergine - Baingan (egg plant)
- Basmati rice - a kind of aromatic rice
- Bay leaf - Tej patta
- Beets - Chukandar
- Besan flour - chickpea flour
- Bottle gourd - Lauki
- Broad beans - Papdi
- Bitter gourd - Karela
- Cauliflower - gobi
- Cluster beans - Papdi

## *Glossary*

- Bitter gourd - Karela
- Black pepper - Kali mirchi
- Cardamom - Elaichi
- Chilies - Mirchi
- Cinnamon - Dalchini
- Cloves - Lavang
- Coconut - Nariyal
- Coriander seeds - Dhaniya
- Cumin - Jeera
- Curry leaves - Kari patta
- Dill - suva bhaji
- Drumsticks - Surgavo
- Eggplant - Brinjal
- Fennel - Saunf
- Fenugreek - Methi seeds
- Fenugreek leaves - Methi leaves
- Fresh coriander - Cilantro
- Garam Masala - Indian spice blend
- Garlic - Lasoon
- Ghee - Clarified butter
- Ginger - Adrak
- Gram flour - Besan or chick pea flour
- Spine gourd -Kankoda
- Jaggery - Gur
- Mace - Javitri
- Malai - Cream
- Mango powder - Amchoor
- Mint - Hara pudeena
- Mustard - Sarasoon or Rai
- Nutmeg - Jaiphal
- Onion seeds - Kalonji
- Oregano seeds - Ajwain
- Sambal oelek - Chilli paste
- Palak - Spinach
- Paanch phhotan/phhotan -five seed seasoning mix of mustard, nigella, fenugreek, fennel & wild celery
- Parsley - Ajmood ka patta
- Paneer - Indian cheese
- Pink beans - Valore
- Pomogranate seeds - Anardana
- Poppy seeds - Khus Khus
- Puffed rice : Mamra, Moori , Pori
- Raisin - Kismish
- Red lentils - Masoor Dhal
- Ridge gourd - Torai or Turia
- Saffron - Kesar
- Semolina - Sooji
- Sesame seeds - Til
- Tamarind - Imli
- Toor Dhal - Yellow split peas
- Turmeric - haldi
- Urad Dhal - Split black gram
- Vinegar - Sirka
- Whole Wheat Flour - Atta /
- Yellow split peas - Channa dhal
- Yogurt - Dhahi

**Theja Mahalingaiah, MA, RD is a clinical dietitian at Southbury Training School Southbury Connecticut. Contact information [theja305@yahoo.com](mailto:theja305@yahoo.com)**

**Nirmala Abraham MS, RD is from Delaware. Contact information 302-239-7119 or [ocnirmala@aol.com](mailto:ocnirmala@aol.com)**

# Appendix 6

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## Diabetes Information in English and Regional languages

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Padmini Balagopal, PhD, RD, CDE, IBCLC

### What Can I Eat To Manage My Diabetes? Information & Guidelines on the Asian-Indian Cuisine

[To be used with the guidance of your physician & Registered Dietitian]

- Diabetes is a condition where your body is not able to make enough insulin or where the insulin not being used properly. Insulin enables your body to get energy from glucose - the sugar broken down from the foods you eat. An imbalance between insulin and blood glucose levels can result in high glucose (hyperglycemia) or low blood glucose (hypoglycemia) levels in your blood.
- Maintaining blood glucose levels in established target range levels is important and research has shown that it can help prevent complications in your eyes, kidneys, blood vessels and more.
- Under your physician's guidance, diabetes and blood glucose levels are managed with Medical Nutrition Therapy, and an Individualized mean plan (see page 4), an exercise routine and medications as needed.
- The foods you eat, your total caloric intake, physical activity and body weight are some of the factors that can affect blood glucose levels. Foods that contain carbohydrates can raise blood glucose levels. Fats and protein can also affect weight, if eaten in excess.
- Keep a daily log of your meals, snacks and blood glucose levels to better understand the effect of food on blood glucose.
- Include a daily exercise plan approved by your doctor, into your regimen.
- Learn to understand nutrition facts labels and ingredients listed on the product label. Your Registered Dietitian can help you with this.

#### Methods of preparing and cooking food

- Sprouting legumes increases nutritional value. It can be fun sprouting different legumes!
- Steam vegetables with little water. Do not drain the cooking water from rice and vegetables.
- Limit or avoid highly processed foods or high-fat, salty "fast" foods.
- Try to eat small, frequent balanced meals at regular times.

#### Drink plenty of water

- 6-8 glasses (8 oz each) are the usually recommended amount. Plain water is the best.
- Avoid excessive use of caffeinated drinks like coffee, tea and caffeine containing drinks.
- Use alcohol only after talking to your physician.

#### Some other factors that can affect health

- Include at least 20 grams of fiber every day. Whole grains, beans & fruits/veg. are rich sources.
- Many 'fast' foods are high in fat, salt and/or sugar. Limit or avoid frequent use of such foods.
- If you have high blood pressure, restrict the use of salt, foods high in salt like regular chips and pickles.
- Talk to your physician about your multi-vitamin and multi-mineral or other dietary supplements.
- Have a physical routine check-up with the American Diabetes Association's Standards of Care for Diabetes as a guide.
- Know your ABCs of diabetes (A1C, blood pressure and cholesterol numbers).

**DIABETES CAN BE MANAGED! TAKE CONTROL! YOU CAN DO IT!!**

**What Can I Eat To Manage My Diabetes?**  
**Information & Guidelines on the Asian-Indian Cuisine**  
**[To be used with the guidance of your physician and Registered Dietitian]**

**Name** : **Today's Date** :  
**Calories/Day** : **Present Weight** :  
**Your BMI** : **Your waist circumference** :

Foods from a variety of sources can be combined to make up a balanced meal. Your personal meal plan should be designed to suit your lifestyle and would include servings of each food group at every meal. Each food group and examples of one serving in each food group are as follows: (Please note that values are approximate).

**1. GRAINS/BEANS/STARCHY VEGETABLES (without added fats or oils)**

[1 serving provides about 15 gms CHO, 3 gms protein and 80 calories]

Bread	: 1 slice	Sookhi roti	: 1-6" wide
Rice	: 1/3 cup (ckd)	Wheat, Corn, Oats, Potato	: 1/2 c. (ckd)
Popcorn	: 3 cups	Green Plantain/Peas	: 1/2 cup
Avial	: 1/2 cup	Poha	: 1/2 cup
Sambar	: 1/2 cup	Dhals/Beans/Legumes	: 1/2 cup
Cooked noodles/sooji	: 1/2 cup		(100 cal.+ 7 gms protein)
Rice Flour	: 2 Tbsp	Idli	: 1
Wheat Flour	: 2 1/2 Tbsp	Naan	: 1/4 - 8" x 2"

**2. MEAT & MEAT ALTERNATIVES - LEAN**

[1 serving provides 7 gms protein, 0-3 gms fat and 45 calories]

Chicken, turkey (skinless white meat)	: 1 oz
Tuna in water, flounder	: 1 oz
Low-fat cheese	: 1 oz
Egg whites only	: 2
Dhal* (*also supplies 15 gms CHO and 100 calories approximately)	: 1/2 cup (cooked)
Shrimp (Prawns)	: 1 oz
Low-fat Tofu	: 3 oz
Chicken, turkey (skinless dark meat)	: 1 oz
Seitan	: 1 oz
Lean lamb, pork, beef	: 1 oz
Regular cottage cheese	: 1/4 cup
Cheeses with 3 gm fat or less	: 1 oz

**MEAT & MEAT ALTERNATIVES - MEDIUM FAT**

[1 serving provides 7 gms protein, 5 gms fat and 75 calories]

Egg	: 1
Fried fish product	: 1 oz
Ricotta cheese	: 1/4 cup
Lamb (rib roast, ground)	: 1 oz
Tofu	: 3.5 oz
Tempeh	: 1/4 cup

### **MEAT & MEAT ALTERNATIVES - HIGH FAT**

[1 serving provides 7 gms protein, 8+ gms fat and 100+ calories]

Regular cheese	: 1 oz
Chicken/turkey hot dog	: 1 (10/lb)
Peanut butter	: 1 oz (+ 1 fat exchange)
Sausage	: 1 oz
Paneer	: 1 oz

### **3. VEGETABLE (no fat added)**

[1 serving provides 5 gms CHO and 2 gms protein and 25 calories]

Greens	: Fenugreek (methi) leaves ½ cup.
Green beans	: ½ cup
Cabbage Cauliflower	: ½ cup
Gourds	: ½ cups
Brinjal (eggplant)	: ½ cup
Capsicum	: ½ cup
Salad	: 1 cup
Drumstick, okra	: ½ cup
Tomato	: ½ cup
White radish, chow-chow	: ½ cup

### **4. FRUITS (Serving size varies)**

[1 serving provides 15 gms CHO 60 calories]

Banana	: ½ cup
Apple, Orange	: 1 (small)
Large Pear	: ½
Melons	: 1 cup
Mango	: ½ cup
Fresh guava	: ½ cup
Canned fruit	: ½ small

### **5. MILK AND MILK PRODUCTS**

[1 serving provides 12 gms CHO, 8 gms protein; 0-8 gms fat; 100-160 calories]

Whole/skimmed/low fat milk	: 1 cup
Buttermilk /Yoghurt/curds (tones or whole)	: 1 cup
Paneer	: 1 oz

### **6. FATS and OILS**

[1 serving provides 5 gms of fat and 45 calories]

Cooking oil	: 1 Tsp.
Coconut, grated	: 2 Tbsp.
Nuts or seeds	: 1 Tbsp.
Margarine	: 1 Tsp.

- The use of unsaturated oils like olive oil instead of saturated fats like butter, coconut products and ghee is recommended. Avoid frequent use of fried foods.
- Minimal use of oils, salt and sugar is recommended.

**Adapted from Choose your foods: Exchange Lists for Diabetes  
by American Dietetic Association and American Diabetes Association (2008:Page 4)**

**What Can I Eat To Manage My Diabetes?**  
**Information and Guidelines to eat on the Asian-Indian Cuisine**

**A sample of an Individualized Meal Plan that be completed by  
 Your Physician and Registered Dietitian**

Yoga/Exercise : Time:

Other scheduled activities : Time:

Meal/Food Group	Servings	CHO* (gms)	Protein (gms)	Fat (gms)	Calories
Breakfast					
Mid-morning					
Lunch					
Mid-Afternoon					
Dinner					
Night Snack					
Total					

\*CHO = Carbohydrate; gms = Grams; oz = ounce; tsp = teaspoon; Tbsp = Tablespoon;  
 28-30gms = 1 oz; 8 oz = 1 cup; 3 tsp = 1 Tbsp; 2 Tbsp = 1 oz; ckd = cooked.

Author:  
**Padmini Balagopal, PhD, RD, CDE**

Reviewed by:  
**Wahida Karmally, DrPH, RD, CDE, CLS, FNLA**  
**Karmeen Kulkarni, MS, RD, BC-ADM, CDE**

## में अपने आहार द्वारा डायबीटीस को नियंत्रण में कैसे रखें?

एशियाई और भारतीय पाकशैली के अनुसार सूचनाएँ और मार्गदर्शन

(अपने डॉक्टर और रजिस्टर्ड डायेटिशियन की निगरानी के तहत अमल करें।)

- डायबीटीस शरीर की वह अवस्था है जब शरीर पर्याप्त मात्रा में इंसुलिन नहीं बना सकता है अथवा इंसुलिन का उपयोग ठीक से नहीं कर सकता है। इंसुलिन के द्वारा ही शरीर अपने आहार से मिली शर्करा या ग्लूकोज से उर्जा ले सकता है। इंसुलिन और रक्त में रहे ग्लूकोज की मात्रा का असंतुलन उच्च रक्त ग्लूकोज (हाईपरग्लाइसेमिया) अथवा निम्न रक्त ग्लूकोज (हाईपोग्लाइसेमिया) के रूप में सामने आते हैं।
- रक्त ग्लूकोज की मात्रा एक निश्चित मात्रा के आसपास रखनी आवश्यक है। अनुसंधान से देखा गया है कि इससे आँख, किडनी, रक्तवाहिनियाँ और शरीर के अन्य अंगों को कुप्रभावों से बचाया जा सकता है।
- अपने डॉक्टर के मार्गदर्शन के तहत डायबीटीस और रक्त-ग्लूकोज की मात्रा चिकित्सकीय आहार चिकित्सा, व्यक्तिगत आहार-योजना (पृष्ठ ४ देखें), व्यायाम और आवश्यकता हो उतनी दवाईयों से संतुलन में रखें जा सकते हैं।
- शरीर के रक्त ग्लूकोज को प्रभावित करने वाले कुछ कारक हैं - आपका आहार, केलरी, शारीरिक क्रियाएँ और शरीर का वजन। कार्बोहाइड्रेट्स-युक्त आहार से रक्त-ग्लूकोज की मात्रा बढ़ती है। चर्बी और प्रोटीन युक्त भोजन भी अधिक मात्रा में लेने से वजन बढ़ता है।
- आपने दैनिक भोजन और रक्त-ग्लूकोज की मात्रा का ब्यौरा रखिये, जिससे परिवर्तन अच्छी तरह से समझे जा सके।
- अपने डॉक्टर से परामर्श करके अपनी दिनचर्या में व्यायाम को महत्वपूर्ण स्थान दें।
- तैयार खाद्य पदार्थ पर लगे लेबल तथा उसकी समग्री से परिचित हों। इसके लिए अपने डायेटिशियन की सहायता लें।

### भोजन तैयार करने की और पकाने की विधि

- दलहन को अंकुरित करने से उसके पोषक तत्वों में वृद्धि होती है। विविध दलहन को अंकुरित करने का आनंद अनोखा है।
- कम पानी में तरकारी उबालें। चावल और तरकारी में से भी पानी निधारें नहीं।
- अति प्रोसेस किये खाद्य पदार्थ और अति चर्बीयुक्त तथा अधिक नमक वाले खाद्य पदार्थ का सेवन बहुत कम करें या न करें।
- कम मात्रा में, अधिक वक्रत और नियत समय पर भोजन करें।

### पानी तथा तरल पदार्थ अधिक लें

- सामान्य रूप से ६-८ प्याले जितने पानी की सलाह दी जाती है। सादा पानी सबसे श्रेष्ठ है। कॉफी, चाय और अन्य कॉफिन युक्त पेय का अधिक सेवन न करें।
- डॉक्टर की सलाह के अनुसार ही शराब का सेवन करें।

### स्वास्थ्य को प्रभावित करने वाले अन्य कारक

- प्रतिदिन कम से कम २० ग्राम जितना रेशायुक्त आहार (फ़ाईबर) का सेवन करें। साबूत अनाज, चने-मटर तथा तरकारी रेशे से भरपूर होते हैं।
- अधिकतर फ़ास्ट फूड में चर्बी, नमक और / या शर्करा की मात्रा अधिक होती है। ऐसे आहार का सेवन बहुत कम करें या न करें।
- यदि आप उच्च रक्तचाप के मरीज़ हैं तो नमक, नमकयुक्त आहार जैसे चिप्स, अचार आदि का सेवन कम करें।
- बहु-विटामिन और बहु-खनिज युक्त अनुपूरक आहार के विषय में अपने डॉक्टर / डायेटिशियन से सूचना प्राप्त करें।
- अमरिकन डायबीटीस एसोसियेशन द्वारा डायबीटीस से सुरक्षा के लिए सुनिश्चित किये मापदंड के अनुसार नियमित रूप से अपनी शारीरिक जाँच करवाएँ।
- डायबीटीस की ए बी सी जान लें। ए -ए वन सी (A1C) बी-ब्लड प्रेशर और सी-केलोस्ट्रॉल।

**डायबीटीस को नियंत्रित किया जा सकता है! नियंत्रित करें! आपके बस की बात है!**

## में अपने आहार द्वारा डायबीटीस को नियंत्रण में कैसे रखें?

एशियाई और भारतीय पाकशैली के अनुसार सूचनाएँ और मार्गदर्शन

(अपने डॉक्टर और रजिस्टर्ड डायेटिशियन की निगरानी के तहत अमल करें।)

नाम :

आज की तारीख :

केलरीज़ / दिन में :

वर्तमान वज़न:

संतुलित आहार के लिए विविध स्रोतों से आहार का समावेश किया जा सकता है। आपकी जीवनशैली के अनुरूप आपके व्यक्तिगत आहार की योजना बनायी जा सकती है। आपकी आहार-योजना में हर वक़्त के लिए आहार-वर्ग की मात्रा सूचित की जाएगी। विविध आहार-वर्ग और प्रत्येक आहार-वर्ग की मात्रा के उदाहरण निम्नलिखित हैं। (कृपया ध्यान दें कि आहार की मात्रा अंदाज़ से ली गई हैं)

### १. दालें / फलियाँ / स्टार्चयुक्त सब्जियाँ (तेल और घी रहित)

(परोसी गई १ मात्रा में लगभग १५ ग्राम कार्बोहाइड्रेट्स, ३ ग्राम प्रोटीन एवं ८० केलरीज़ हैं।)

ब्रेड : १ टुकड़ा

चावल : १/३ कप

पोपकोर्न : ३ कप

मिक्स सब्जी : १/२ कप

दाल : १/२ कप

तैयार सेवैया नूडल्स / सूजी : १/२ कप

चावल का आटा : २ बड़े चम्मच

सूखी चपाती : १-६" चौड़ी

गेहूँ, मकई, ओट्स, आलू : १/२ कप

कच्चा केला / मटर : आधा कप

पोहा : १/२ कप

सेम / फली : १/२ कप (१०० केलरीज़ और ७ ग्राम प्रोटीन)

इडली : १ नान: १/४ "८"X२"

गेहूँ का आटा : द्वाँ चम्मच

### २. मांस एवं मांस के विकल्प (अति कम चरबी युक्त)

(परोसी गई १ मात्रा में लगभग ७ ग्राम प्रोटीन, ०-१ ग्राम चरबी तथा ३५ केलरीज़ हैं।)

मुर्गी, टर्की (त्वचारहित सफ़ेद मांस) — १ औंस

टूना पानी में, फ्लाउन्डर : १ औंस

दो अंडों का सफ़ेद हिस्सा

श्रीम्प (प्रोन्स) : १ औंस

कम चरबी वाला टोफू : ३ औंस

कम चरबी वाली चीज़ : १ औंस

दाल : १/२ कप (पकी हुई)

(यह दाल लगभग १५ ग्राम कार्बोहाइड्रेट्स

और १२० केलरीज़ भी देती है।)

### मांस एवं मांस के विकल्प (कम चरबी युक्त)

(परोसी गई १ मात्रा में ७ ग्राम प्रोटीन, ३ ग्राम चरबी तथा ५५ केलरीज़ हैं।)

मुर्गी, टर्की (त्वचारहित डार्क मांस) : १ औंस

टूना तेल में : १ औंस

सामान्य कोटेज चीज़ : १/४ कप (चीज़ जिसमें ३ ग्राम या उससे कम चरबी हो) : १ औंस

लीन लेंब, पोरक, बीफ़ : १ औंस

### मांस एवं मांस के विकल्प (मध्यम चरबी युक्त)

(परोसी गई १ मात्रा में ७ ग्राम प्रोटीन, ५ ग्राम चरबी तथा ७५ केलरीज़ हैं।)

अंडा : १

रिकोटा चीज़ : १/४ कप

टोफू : ४ औंस

तला हुआ मछली उत्पाद : १ औंस

लंब (रिब रोस्ट, ग्राउन्ड) : १ औंस

टेम्फ़ : १/४ कप सोयाबीन का दूध : १ कप



**मांस एवं मांस के विकल्प (अधिक चरबी युक्त)**

(परोसी गई १ मात्रा में ७ ग्राम प्रोटीन, ८ ग्राम चरबी तथा १०० केलरीज़ हैं।)

सामान्य पनीर : १ औंस

चिकन / टर्की हॉट डॉग : १ (१०/पाउंड)

मूँगफली का मक्खन : १ औंस (+ १ चरबी एक्सचेंज)

ससेज : १ औंस

१% पनीर : १ औंस

**३. सब्जियाँ (बिना तेल घी के)**

(परोसी गई १ मात्रा में ५ ग्राम कार्बोहाइड्रेट्स, २ ग्राम प्रोटीन, तथा २५ केलरीज़ हैं।)

हरी मेथी की पत्तियाँ : १/२ कप

हरी फलियाँ : १/२ कप

बंद गोभी एवं फूल गोभी : १/२ कप

कद्दू : १/२ कप

बैंगन : १/२ कप

शिमला मिर्च : १/२ कप

सफ़ेद मूली : १/२ कप

मूँगा, भिंडी : १/२ कप

सलाद : १ कप

**४. फल (मात्रा में परिवर्तन हो सकता है)**

(परोसी गई १ मात्रा में १५ ग्राम कार्बोहाइड्रेट्स तथा ६० केलरीज़ हैं।)

केला : १/२ कप

सेब, संतरा : १ (छोटा)

बड़ी नाशपती : १/२ कप

तरबूजा तथा खरबूजा : १ कप

छोटा आम : १/२ कप

ताज़ा अमरूद : १/२ कप

**५. दूध एवं दूध के उत्पाद**

(परोसी गई १ मात्रा में १२ ग्राम कार्बोहाइड्रेट्स, ८ ग्राम प्रोटीन, ०-५ ग्राम चरबी तथा ९०-१६० केलरीज़ हैं।)

लस्सी या दही : १ कप

१% पनीर : १ औंस

**६. चरबी, घी एवं तेल**

(परोसी गई १ मात्रा में ५ ग्राम चरबी तथा ४५ ग्राम केलरीज़ हैं।)

तेल : १ चम्मच

सूखा नारियल (चूरा) : २ बड़े चम्मच

सूखे मेवे या सेम के बीज : १ बड़ा चम्मच

मक्खन या मार्जरीन : १ चम्मच

- मक्खन, घी जैसी सेच्युरेटेड चरबी के बदले जैतून के तेल जैसी अनसच्युरेटेड चरबी का उपयोग करने का प्रयास करें। तला हुआ भोजन बार-बार न लें।
- तेल, नमक तथा चीनी का उपयोग कम से कम करें।

अमेरिकन डायट एसोसियेशन एंड अमेरिकन डायबीटीस एसोसियेशन, २००८ द्वारा

**में अपने आहार द्वारा डायबीटीस को नियंत्रण में कैसे रखें?**

एशियाई और भारतीय पाकशैली के अनुसार सूचनाएँ और मार्गदर्शन

(अपने डॉक्टर और रजिस्टर्ड डायेटिशियन की निगरानी के तहत अमल करें।)

योग / व्यायाम :

समय :

दैनिक कार्यक्रम :

समय:

भोजन	परोसी गई मात्रा	कार्बोहाइड्रेट्स (ग्राम)	प्रोटीन (ग्राम)	चर्बी (ग्राम)	केलरी
सुबह					
नास्ता					
दोपहर					
नास्ता					
शाम					
नास्ता					
कुल					

२८-३०ग्राम = एक औंस, ८ औंस = १ कप, ३ चम्मच = १ बड़ा चम्मच, २ बड़े चम्मच = १ औंस

Author:

**Padmini Balagopal, PhD, RD, CDE**

Reviewed by:

**Wahida Karmally, DrPH, CDE, CLA, FNLA  
Karmeen Kulkarni, MS, RD, CDE**

Hindi translation by:

**Vanita Manchanda, MS, RD**

**Roshan Khaki, RD LD CDE**

**Uday Meghani, MA (Economics and JMC)**

Reviewed by:

**Varsha, PhD, RD, CNIS**

## હું મારા આહાર દ્વારા ડાયાબીટીસને નિયંત્રણમાં કઈ રીતે રાખું ?

એશિયાઈ અને ભારતીય પાક-શૈલી મુજબ સૂચના અને માર્ગદર્શન  
(તમારા ડૉક્ટર અને રજીસ્ટર્ડ ડાયેટિશીયનની દેખરેખ હેઠળ ઉપયોગ કરવો)

- ડાયાબીટીસ શરીરની એ સ્થિતિ છે જ્યારે શરીર પૂરતાં પ્રમાણમાં ઇનસુલિન બનાવી શકતું નથી અથવા ઇનસુલિનનો ઉપયોગ બરાબર રીતે કરી શકતું નથી. ઇનસુલિન દ્વારા જ શરીર આપણાં આહારમાંથી છૂટી પડેલી શર્કરા અથવા ગ્લુકોસમાંથી ઉર્જા લઈ શકે છે. ઇનસુલિન અને રક્તમાં રહેલ ગ્લુકોસનાં પ્રમાણમાં અસંતુલન ઉચ્ચ રક્ત-ગ્લુકોસ (હાઈપરગ્લાઈસિમિયા) અથવા નિમ્ન રક્ત-ગ્લુકોસ (હાઈપોગ્લાઈસિમિયા)માં પરિણમે છે.
- રક્ત-ગ્લુકોસનું પ્રમાણ એક નિશ્ચિત પ્રમાણની આસપાસ રાખવું જરૂરી છે. સંશોધન દ્વારા જાણવા મળ્યું છે કે આના દ્વારા આંખ, કિડની, રક્તવાહિનીઓ અને શરીરના અન્ય અંગોને માઠી અસરોથી બચાવી શકાય છે.
- તમારા ડૉક્ટરના માર્ગદર્શન હેઠળ, ડાયાબીટીસ અને રક્ત-ગ્લુકોસનું પ્રમાણ તબીબી આહાર ચિકિત્સા, વ્યક્તિગત આહાર-યોજના (જુઓ પાનું ૪) કસરત અને જરૂર પૂરતી દવા દ્વારા સંતુલનમાં રાખી શકાય છે.
- શરીરના રક્ત-ગ્લુકોસ પ્રમાણને પ્રભાવિત કરતાં અમુક ઘટકો છે - તમારો આહાર, કુલ કેલરી, શારીરિક ક્રિયાઓ અને શરીરનું વજન. કાર્બોહાઈડ્રેટ્સ ધરાવતા આહારથી રક્ત-ગ્લુકોસનું પ્રમાણ વધે છે. ચરબી અને પ્રોટીનવાળો ખોરાક પણ વધારે પ્રમાણમાં લેવાય તો એનાથી પણ વજન વધે છે.
- તમારા રોજનાં ભોજન અને રક્ત-ગ્લુકોસનાં પ્રમાણની નોંધ રાખો જેથી ફેરફાર સારી રીતે સમજી શકાય.
- ડૉક્ટરની સલાહ લઈને તમારી દિનચર્યામાં કસરતને મહત્વનું સ્થાન આપો.
- તૈયાર ખાદ્ય-પદાર્થો પર લાગેલા લેબલ અને એની સામગ્રીથી પરિચિત થાવ. આ માટે આપના ડાયેટિશીયનની મદદ લો.

### ખોરાક બનાવવાની અને રસોઈની રીત

- કઠોળને ફણગાવવાથી એના પોષક તત્વો વધી જાય છે. વિવિધ કઠોળોને ફણગાવવાનો અનેરો આનંદ છે.
- શાકભાજી ઓછાં પાણીમાં બાફવા. ભાત અને શાકભાજીમાંથી પાણી ન નીતારવું.
- અતિ પ્રોસેસ કરેલા ખાદ્ય-પદાર્થો અને વધારે ચરબીવાળા તથા વધારે મીઠું નાખેલા ખાદ્ય-પદાર્થો બહુ ઓછા વાપરો અથવા ન વાપરો.
- ઓછા પ્રમાણમાં, વધુ વખત અને નિયમિત સમયે ખોરાક લેવા પ્રયાસ કરો.

### પાણી તથા પ્રવાહી વધુ પીઓ

- સામાન્ય રીતે ૬-૮ ગ્લાસ પાણીની સલાહ અપાય છે. સાદુ પાણી સૌથી શ્રેષ્ઠ છે.
- કોફી, ચા અને કેફિન ધરાવતા અન્ય પીણાઓનું સેવન વધારે ન કરો.
- ડૉક્ટરની સલાહ મુજબ જ દારૂ લેવો.

### સ્વાસ્થ્યને પ્રભાવિત કરતા અન્ય ઘટકો

- રોજ ઓછામાં ઓછો ૨૦ ગ્રામ જેટલો રેશાવાળો ખોરાક (ફાઈબર) લો. આખું અનાજ, ચણાં-વટાણાં તથા શાકભાજી રેશાથી ભરપૂર હોય છે.
- મોટાં ભાગનાં ફાસ્ટ ફૂડમાં ચરબી, મીઠું અને / અથવા સાકરનું પ્રમાણ બહુ વધારે હોય છે. આવા ખોરાકનો ઉપયોગ બહુ ઓછો કરો અથવા ન કરો.
- જો આપને ઊંચું બ્લડ પ્રેશર રહેતું હોય તો મીઠું, મીઠાંવાળો ખોરાક દા.ત. ચિપ્સ, અથાણું વગેરે ઓછા લો.
- બહુ-વિટામિન અને બહુ-ખનિજ ધરાવતા પૂરક આહાર વિશે તમારા ડૉક્ટર / ડાયેટિશીયન પાસેથી જાણી લો.
- અમેરિકન ડાયાબીટીસ એસોસિયેશન દ્વારા ડાયાબીટીસની કાળજી માટે નક્કી કરેલ ધોરણ મુજબ નિયમિત રીતે શારીરિક તપાસ કરાવવી.
- ડાયાબીટીસની એ બી સી જાણો. એ - એ વન સી (A1C) બી - બ્લડ પ્રેશર અને સી - કેલસ્ટ્રોલ.

**ડાયાબીટીસ કાબુમાં રાખી શકાય છે! કાબુમાં રાખો! તમે રાખી શકો છો!**

**હું મારા આહાર દ્વારા ડાયાબીટીસને નિયંત્રણમાં કઈ રીતે રાખું ?**

એશિયાઈ અને ભારતીય પાક-શૈલી મુજબ સૂચના અને માર્ગદર્શન

(તમારા ડૉક્ટર અને રજીસ્ટર્ડ ડાયેટીશીયનની દેખરેખ હેઠળ ઉપયોગ કરવો)

નામ :

આજની તારીખ :

કેલરી / દિવસમાં :

વર્તમાન વજન :

સમતોલ આહાર માટે વિવિધ સ્ત્રોતોથી આહારનો સમાવેશ કરી શકાય. તમારી જીવન-શૈલીને અનુરૂપ તમારા વ્યક્તિગત આહારની યોજના ઘડી શકાય. તમારી આહાર-યોજનામાં દરેક ટંકના દરેક ખોરાક-વર્ગનું પ્રમાણ સૂચવવામાં આવે છે. વિવિધ ખોરાક-વર્ગ અને દરેક ખોરાક-વર્ગના પ્રમાણના ઉદાહરણો નીચે મુજબ છે. (ખોરાકનું પ્રમાણ અંદાજે લખેલ છે જેની નોંધ લેવા વિનંતી.)

**૧. અનાજ ચણાં-વટાણાં સ્ટાર્ચયુક્ત શાકભાજી (ધી-તેલ વગરના)**

(એક પીરસેલો ભાગ લગભગ ૧૫ ગ્રામ કાર્બોહાઈડ્રેટ્સ, ૩ ગ્રામ પ્રોટીન અને ૮૦ કેલરી)

બ્રોડ : ૧ સ્લાઈસ

કોરી રોટલી : ૧-૬" પહોળી

ભાત : ૧/૩ કપ

ઘઉં, મકાઈ, ઓટ્સ, બટાટા : ૧/૨ કપ (રાંધેલા)

પોપકોર્ન : ૩ કપ

વટાણાં / કાચાં કેળાં : ૧/૨ કપ

મિક્સ શાક : ૧/૨ કપ

પૌંઆ : ૧/૨ કપ

દાળ : ૧/૨ કપ

કઠોળ / દાળ : ૧/૨ કપ (૧૦૦ કેલરી અને ૭ ગ્રામ પ્રોટીન)

રાંધેલી નૂડલ્સ

ઈંડલી : ૧

અને સ્પેગેટી : ૧/૨ કપ

નાન : ૧/૪ ૮X૨"

ચોખાનો લોટ : ૨ ચમચા

ઘઉંનો લોટ : અઢી ચમચા

**માંસ અને માંસના વિકલ્પો - ઓછી ચરબીવાળા**

(એક પીરસેલો ભાગ લગભગ ૭ ગ્રામ પ્રોટીન, ૩ ગ્રામ ચરબી અને ૪૫ કેલરી)

ચીકન / ટર્કી (ચામડી વિનાનું સફેદ માંસ) : ૧ ઓંસ

ટુના પાણીમાં, ફ્લાઉન્ડર : ૧ ઓંસ

લેમ્બ પોર્ક, બીફ (ચરબી વગરનો) : ૧ ઓંસ

કોટેજ ચીઝ : ૧/૪ કપ

ચીઝ ૩ ગ્રામ અથવા ઓછી ચરબી વાળું : ૧ ઓંસ

દાળ : ૧/૨ કપ (રાંધેલી)

ઈંડાની સફેદી ફક્ત : ૨

શ્રીંપ (પ્રોન્સ) : ૧ ઓંસ

ઓછી ચરબી વાળું ટોફુ : ૩ ઓંસ

(લગભગ ૧૫ ગ્રામ કાર્બોહાઈડ્રેટ્સ અને ૧૦૦ કેલરી મળે)

**માંસ અને માંસના વિકલ્પો - મધ્ય ચરબીવાળા**

ઈંડું : ૧

તળેલી માછલી : ૧ ઓંસ

રીકોટા ચીઝ : ૧/૪ કપ

લેમ્બ (રીબ રોસ્ટ ગ્રાઉંડ) : ૧ ઓંસ

ટોફુ : ૪ ઓંસ

ટેમ્પે : ૧/૪ કપ સોયાબીનનું દૂધ : ૧ કપ

**માંસ અને માંસના વિકલ્પો - અતિ ચરબીવાળા**

(એક પીરસેલો ભાગ લગભગ ૭ ગ્રામ પ્રોટીન, ૮ ગ્રામ ચરબી અને ૧૦૦ કેલરી)

ચીઝ (રેગ્યુલર) : ૧ ઓંસ

ચીકન/ટર્કી/હોટ ડોગ : ૧ (૧૦/પાઉંડ)

પીનટ બટર : ૧ ઓંસ (૧ ચરબીનો એક્સચેન્જ)

પનીર : ૧ ઓંસ

સોસેજ : ૧ ઓંસ

૨. શાકભાજી (તેલ-ઘી વગરના)

(એક પીરસેલો ભાગ લગભગ ૫ ગ્રામ કાર્બોહાઈડ્રેટ્સ, ૨ ગ્રામ પ્રોટીન અને ૨૫ કેલરી)

મેથીની ભાજી : ૧/૨ કપ	ગ્રીન બીન્સ : ૧/૨ કપ
કોબી, ફલાવર : ૧/૨ કપ	ગીસોળી : ૧/૨ કપ
શિંગણાં : ૧/૨ કપ	મરચાં : ૧/૨ કપ
સલાડ : ૧/૨ કપ	સરગવો, ભીંડા : ૧/૨ કપ
ટમેટા : ૧/૨ કપ	સફેદ મૂળા : ૧/૨ કપ

૩. ફળ (પીરસવાનું પ્રમાણ બદલી શકાય)

(એક પીરસેલો ભાગ લગભગ ૧૫ ગ્રામ કાર્બોહાઈડ્રેટ્સ અને ૬૦ કેલરી)

કેળાં : ૧/૨ કપ	સફરજન, નારંગી : ૧/૨ કપ
મોટું પેર : ૧/૨ કપ	ચીભળું, કલીંગર : ૧/૨ કપ
આંબો : ૧/૨ કપ	જામફળ : ૧/૨ કપ

૪. દૂધ, દહીં, છાશ વગેરે

(એક પીરસેલો ભાગ લગભગ ૧૨ ગ્રામ કાર્બોહાઈડ્રેટ્સ, ૮ ગ્રામ પ્રોટીન ૦-૪ ગ્રામ ચરબી અને ૭૦-૧૬૦ કેલરી)

દૂધ (હોલ, સ્કીમ, ઓછી ચરબીવાળું) : ૧ કપ	દહીં અને છાશ (ટોન્ડ અથવા હોલ) : ૧ કપ
પનીર : ૧ ઓંસ	

૫. ચરબી, ઘી, તેલ વગેરે

(એક પીરસેલો ભાગ લગભગ ૫ ગ્રામ ચરબી અને ૪૫ કેલરી)

તેલ : ૧ ચમચી	છીણેલું ટોપડું : ૨ ચમચા
સૂકો મેવો, ચીભળાનાં બીજ વગેરે : ૧ ચમચો	મારજરીન : ૧ ચમચી

- માખણ, કોપડું અને ઘી જેવી સેચ્યુરેટેડ ચરબીની બદલે ઓલીવ તેલ જેવી અનસેચ્યુરેટેડ ચરબી વાપરવી વધારે હિતાવહ છે.
- ઘી, મીઠું અને ખાંડ ઓછામાં ઓછી વાપરો.

અમેરિકન ડાયેટ એસોસિએશન એન્ડ અમેરિકન ડાયાબેટીક એસોસિએશન (૨૦૦૮) દ્વારા

*Diabetes Information in English and Regional languages*

**હું મારા આહાર દ્વારા ડાયાબીટીસને નિયંત્રણમાં કઈ રીતે રાખું ?**

એશિયાઈ અને ભારતીય પાક-શૈલી મુજબ સૂચના અને માર્ગદર્શન

(તમારા ડૉક્ટર અને રજીસ્ટર્ડ ડાયેટીશીયનની દેખરેખ હેઠળ ઉપયોગ કરવો)

થોગ / વ્યાયામ :

સમય :

દૈનિક કાર્યક્રમ :

સમય :

ખોરાક	પીરસેલો ભાગ	કાર્બોહાઈડ્રેટ્સ (ગ્રામ)	પ્રોટીન (ગ્રામ)	ચરબી (ગ્રામ)	કેલરી
સવારે					
નાસ્તો					
બપોરે					
નાસ્તો					
સાંજે					
નાસ્તો					
કુલ					

૨૮-૩૦ ગ્રામ = એક ઓંસ, ૮ ઓંસ = ૧ કપ, ૩ ચમચી = ૧ ચમચો, ૨ ચમચા = ૧ ઓંસ

Author: **Padmini Balagopal**, PhD, RD, CDE

Gujarati translation by:

**Balwant Suthar**

**Rita (Shah) Batheja**, MS, RD, CDN

**Bharat S. Shah**, MD

Reviewed by:

**Varun Japee**, B Com



# AMERICAN ASSOCIATION OF PHYSICIANS OF INDIAN ORIGIN

630-990-2277 [info@aapiusa.org](mailto:info@aapiusa.org)  
600 Enterprise Drive Suite 108  
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