LIFE FOR A CHILD

ISPAD
International Society for Pediatric and Adolescent Diabetes

Healthy eating and carbohydrate counting for children and adults with type 1 diabetes

Indian Foods – Edition 1, 2021

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Table of Contents

This book is divided into three sections:

Foreword

Management of type 1 diabetes is a balancing act with three big players – insulin, food and exercise. This is not easy, particularly for children and adolescents, with all the excitement and changes that are happening in their lives. But, when it is done well, young people with diabetes can lead normal and active lives and avoid long-term diabetes complications. Knowing how much carbohydrate is in each meal is a critical part of this. This book will help teach the young person with diabetes and their family about healthy eating and provide tools to work out the carbohydrate amounts in the foods they eat, so they can adjust insulin doses according to the carbohydrates they consume.

In Section 1, this book explains about why carbohydrate counting is important. Section 2 does a magnificent job of covering the great variety of foods across India, and Section 3 covers common international foods. This is the first version of the resource, and other versions for other countries will follow. The layout of this book makes this easier to do, as, for each new version, Sections 1 and 3 will remain largely unchanged.

Life for a Child (LFAC) and the *International Society for Pediatric and Adolescent Diabetes* (ISPAD) are delighted to endorse this new resource, and thank all the authors and contributors.

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Life for a Child

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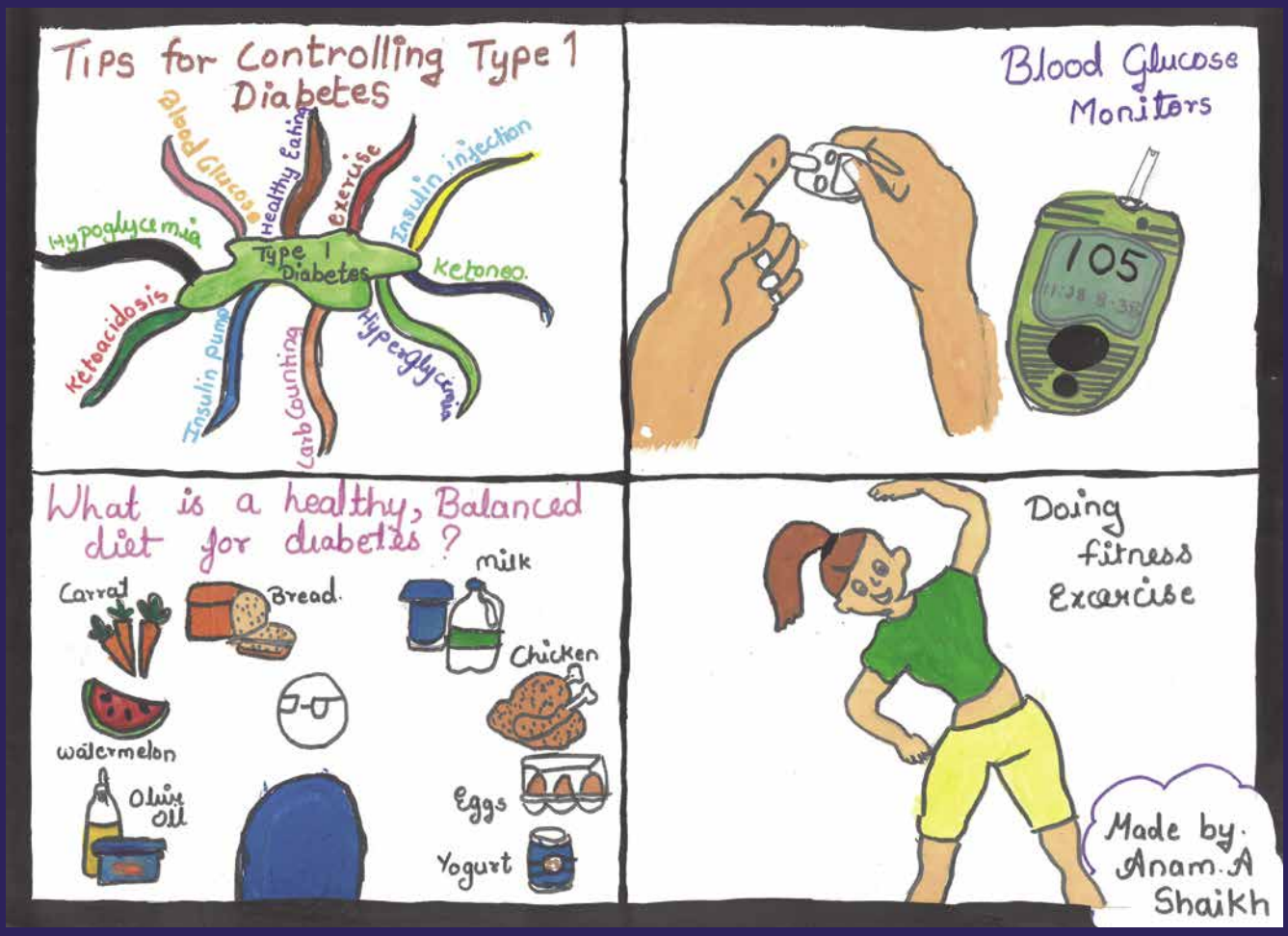
1 Healthy eating and carbohydrate counting

When you or your child is diagnosed with diabetes, one of the first things that might come to mind is that you have to give up your favourite foods. Not true! The good news is that there is no diabetic diet. Children and adults with diabetes can eat the same healthy food as the rest of the family. However, it is important to pay special attention to the amount and type of carbohydrates eaten.

This booklet is for people and their families living with type 1 diabetes. It will teach you how to make healthy food choices and count the carbohydrate in your meals and snacks.

People with type 1 diabetes need to match the short or rapid acting insulin dose to the amount of carbohydrate they eat. This helps to prevent high and low blood glucose levels.



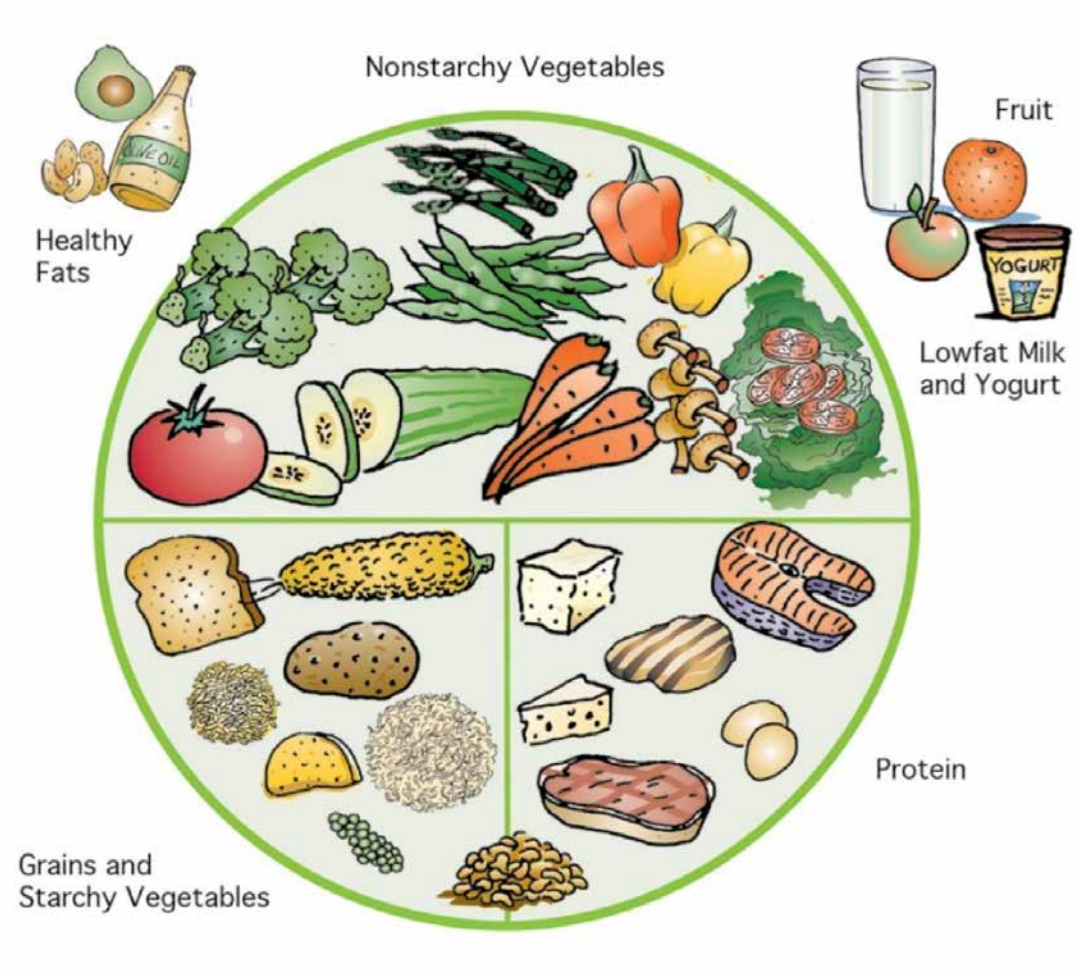
What is healthy eating?

Healthy eating is important for everyone. It involves eating a wide variety of nutritious foods.

It can be helpful to use a plate model to plan your meal.

The plate below shows how much of the foods from the different food groups we should eat.

Children and adults with diabetes can eat the same healthy food as the rest of the family.



Healthy eating guide:

- ✓ Eat a variety of family-based healthy meals. You don't need to eat a special diabetes diet.
- ✓ Include three meals a day and avoid missing meals.
- ✓ If you need to eat snacks, have a small amount of carbohydrate only (e.g. a piece of fruit or a plain yoghurt). Have the snack 2-3 hours before or after your main meals.
- ✓ Eat fibre rich foods such as whole grains-cereals, millets, pulses/legumes, vegetables and small amounts of fruit, nuts and seeds. These make you feel fuller for longer and improve blood glucose levels.

Important healthy eating and insulin injection habits:

- ✓ **Make sure to have short or rapid acting insulin before eating meals that contain carbohydrates!**
- ✓ If you eat a snack that contains less than 10 grams of carbohydrate, no insulin is usually needed.
- ✓ Avoid sugary drinks: keep hydrated with water.
- ✓ Avoid eating in front of screens (e.g. TV, phone, computer). Pay attention to the meals and snacks you eat.
- ✓ Maintain a healthy weight (limit take away foods, pay attention to portion sizes, be active every day).

Healthy foods include

Vegetables (cucumber, tomatoes, carrots, lettuce, etc)

Legumes (chickpeas, lentils, broad beans)

Fruits

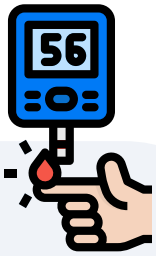
Dairy foods

Wholegrain breads and cereals

Lean meat, fish, chicken, nuts and eggs

Foods containing poly- & mono-unsaturated fats (e.g. avocado, olive oil, groundnut oil, mustard oil and rice bran oil)

What are carbohydrate foods?



Carbohydrate foods or 'carbs' are:

- **Starches** such as grains (e.g. bread, cereals), starchy vegetables (e.g. potato, corn), rice, pasta, lentils and other legumes
- **Sugars** such as the natural sugar in fruit and milk and the added sugar in soft drinks, sweets, biscuits, chocolates and many packaged foods.

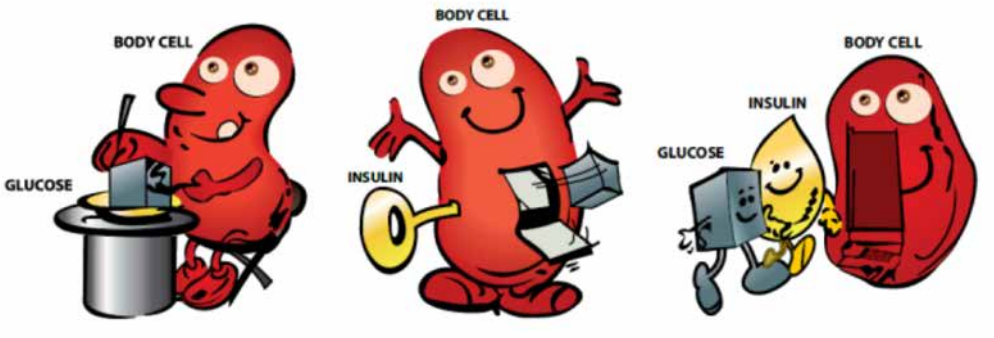
Eating adequate amounts of healthy carbohydrates is essential to maintain good health!

When you have type 1 diabetes you need to inject insulin as your body no longer makes its own.

How do carbohydrates affect your blood glucose levels?

When you eat foods that contain carbohydrates, they are broken down into glucose (a form of sugar). The glucose then ends up in your blood and is used as energy to run your body – like the petrol that runs a car. The amount of glucose in the blood is called blood glucose level (BGL) and is measured in mmol/L or mg/dL. To convert the glucose into energy we need insulin.

Insulin works like a key that unlocks the doors to our body cells. Once the door is unlocked, glucose from the blood can enter and be used as energy by the body.



Blood glucose monitoring

A fingerprick check with a blood glucose meter will tell you what your blood glucose level is (in mmol/L or mg/dl).

Regular blood glucose monitoring is key to keeping your/your child's blood glucose level as close to the target (healthy) range as possible.

Aim for these blood glucose levels

Before a meal	4-7 mmol/L	70-126 mg/dl
2-3 hours after a main meal	5-10 mmol/L	90-180 mg/dl

What is 'Carbohydrate Counting' and why is it important?

Carbohydrate counting – also referred to as carb counting - is a way of estimating the amount of carbohydrate in different foods. It is important to match your/child's meal insulin dose to the amount of carbohydrate food in the meal. This will prevent high or low blood glucose levels.

With the help of this book, your health professional will teach you to accurately count the amount of carbohydrate in the meals and snacks you eat. This will enable you to better match the insulin doses to the amount of carbohydrate food you eat.

Remember!
The more carbs you eat, the more short or rapid acting insulin you will need to inject.

Insulin regimens

The type of insulin and the number of injections per day will determine how you spread your carbohydrate intake throughout the day. There are three common insulin regimens:

1 Two fixed doses per day

Usually consists of intermediate and short acting insulin mixed (like a pre-mixed insulin), given before breakfast and the evening meal. This requires eating the same amounts of carbohydrate food at the same time every day (usually 3 meals and 3 snacks). It does not allow you to adjust insulin doses for extra or less carbohydrate food eaten.

2 Multiple Daily Injections (MDI)

Also called 'Basal bolus regimen'. This generally involves a combination of intermediate or long acting insulin (basal) once or twice a day and short or rapid acting (also called bolus or meal) insulin. Bolus insulin is given three or more times a day before meals and sometimes before snacks.

3 Insulin Pump

This therapy provides a background (basal) dose of insulin that is continuously and automatically given by the pump.

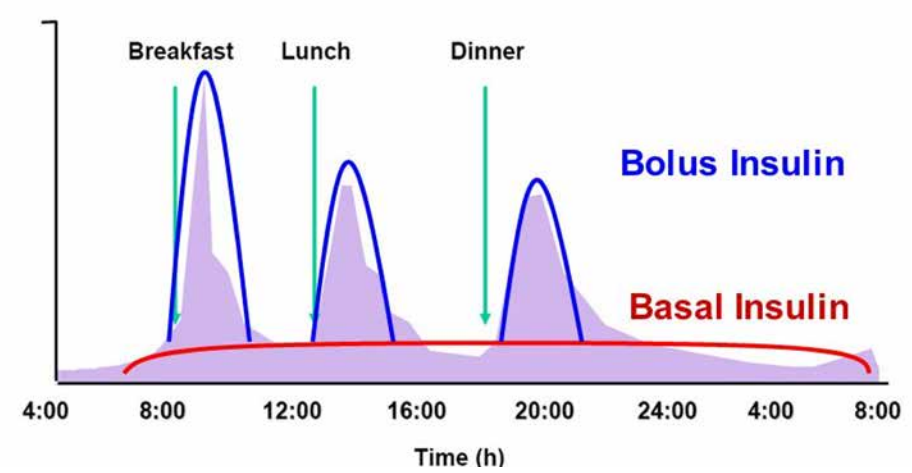
Bolus or meal insulin is given manually by operating the pump each time the person eats a carbohydrate containing food.

An Insulin-to-carbohydrate ratio (ICR) is the amount of carbohydrate (grams) covered by one unit of short/rapid acting insulin (for example: 1 unit of regular or short acting insulin is needed for every 20 grams of carbohydrate eaten).

The ICR will vary depending on body weight, physical activity, how sensitive the body is to insulin and may be different at different times of the day. Your health professional will discuss and work out the ratio with you.

How do I match my insulin dose to the carbohydrate food I eat?

Blood glucose levels (BGLs) begin to rise approximately fifteen minutes after eating carbohydrate containing food. They reach a peak around 1 hour and then slowly fall again. BGLs should be back to a target (healthy) range within 2-3 hours after eating.



Adapted from White JR, et al. *Postgrad Med.* 2003;113:30-36.

Important!
Do NOT adjust your NPH/long acting insulin dose for your food!

Blood glucose level rise after each meal is shown in purple.

The rise and fall in BGLs depends on how accurately the bolus insulin dose is matched to the amount of carbohydrate you eat. In the graph above the bolus insulin dose is matched perfectly.

Tip!
If you write down your BGLs, carbohydrate foods and insulin doses for a few days, it will help you and your health care team adjust your insulin to carbohydrate ratio (ICR).

Carbohydrate, Protein and Fat

Carbohydrates

Carbohydrates are broken down into glucose immediately and have the most effect on blood glucose levels. Most of the carbohydrates you eat should be healthy choices such as grains, legumes, fruits, starchy vegetables, milk and milk products. Choose carbohydrate foods which have a lower Glycemic Index (GI) (explained later).

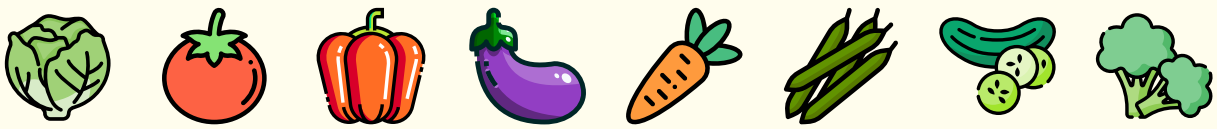
Foods containing Carbohydrate include:

Grains: Includes bread, bread rolls, flat bread, handbreads/chapattis/roti, millets, porridge, breakfast cereal, pasta, rice, noodles, flour, quinoa and barley. Wholegrains are the best choices.

Fruit: Includes all fresh fruit such as apple, orange, pear, banana, watermelon, grapes, dried fruits (such as apricots, dates, raisins, figs) and canned fruit.

Starchy vegetables, legumes and pulses: Includes potato, sweet potato, corn, taro, yam, legumes – baked beans, chickpeas, kidney beans and lentils.

Low Carbohydrate Vegetables: Most non-starchy vegetables are low in carbohydrate and are important for good health. Eat plenty of vegetables including tomato, cucumber, celery, carrots, capsicum, cauliflower, mushrooms, peas, green beans, zucchini, broccoli, lettuce etc. These can be eaten in salad, soup, stir fry or as steamed vegetable. Frozen vegetables are also a healthy choice.



Milk and dairy: Includes milk, yoghurt, lassi, custard, ice cream and dairy desserts.

Packaged, processed snack foods and take away foods: Includes chips, crackers, bars, biscuits, muffins and chocolate. Take away foods include hamburgers, hot chips, and pizza. **These foods are not recommended to be eaten on a regular basis as they can cause high blood glucose levels and lead to unhealthy weight gain.**

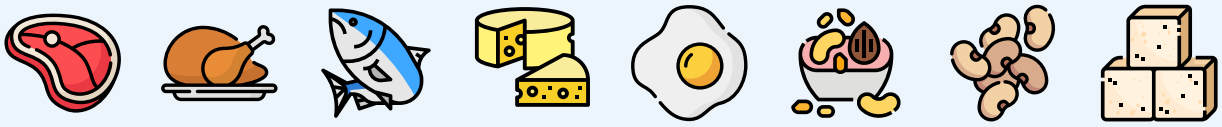
High sugar foods and drinks: Includes regular soft drinks, cordials, juice, lollies, sports drink, jelly and sugar. **These foods are not a good choice. They can cause high blood glucose levels and lead to unhealthy weight gain. However, some of these foods are appropriate to treat low blood glucose levels (hypoglycaemia).**

Proteins

Protein foods help your body to grow, develop and repair body tissue. You need to eat some protein foods each day. **NOTE:** Some protein foods such as legumes (dals and pulses) and dairy (milk and yoghurt) also contain carbohydrate and must be considered when counting carbs. Non vegetarian protein foods such as chicken, seafood/fish, eggs and red meat do not contain carbohydrates.

Foods containing Protein include:

Lean meat, chicken, fish, dairy (cottage cheese/paneer), eggs, nuts (for example almonds, walnuts, pistachios, peanuts) and seeds, tofu, and legumes such as lentils, broad beans, chickpeas. Choose protein foods that are low in saturated fat i.e. lean meat, skinless chicken, eggs and fish.



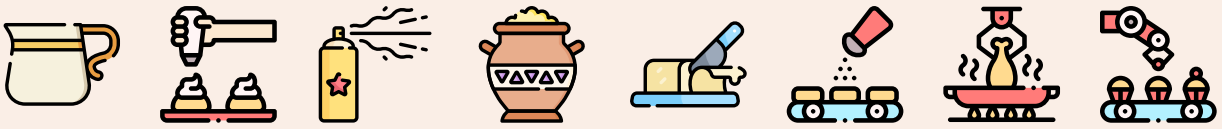
Fats and Oils

Fats are a normal part of a healthy diet and are essential for growth and development. However, use them in small amounts (approximately 4 teaspoons of added oil or fat per day). Too much of any fat or oil can lead to weight gain. Ask your dietitian for advice.

Foods containing Fats and Oils include:

Polyunsaturated and monounsaturated fats include healthy fats such as sunflower oil, safflower oil, olive oil, groundnut oil, rice bran oil, peanut butter, nuts, avocado, sesame seeds, soybean, canola and mustard oil.
Include omega-3 fatty acid rich foods such as fatty fish like mackerel, sardines, tuna and salmon, chia seeds, flaxseeds, walnuts and soybean. These are the best types of fats.

Unhealthy fats: Limit foods high in saturated or trans fats including cream, butter, ghee, cooking margarine and processed foods. Too much saturated fat can raise blood cholesterol levels and increase the risk of heart disease.



GO SLOW!
Cake, chocolates, sweets and take away food are treats which you can eat for special occasions like everyone else. But make sure you count the carbs and give extra short or rapid acting insulin!

Speak to your dietitian or health care professional about appropriate foods and amounts for you.

How to count carbohydrates?

Carbohydrates are measured in grams (g) and may be counted in grams, exchanges or portions. In this book we will only refer to grams.

To count carbohydrates:

1 **Identify the foods containing carbs**

Identify the foods in your meal or snack that contain carbohydrates, for example, in the picture below it is the rice and oranges.

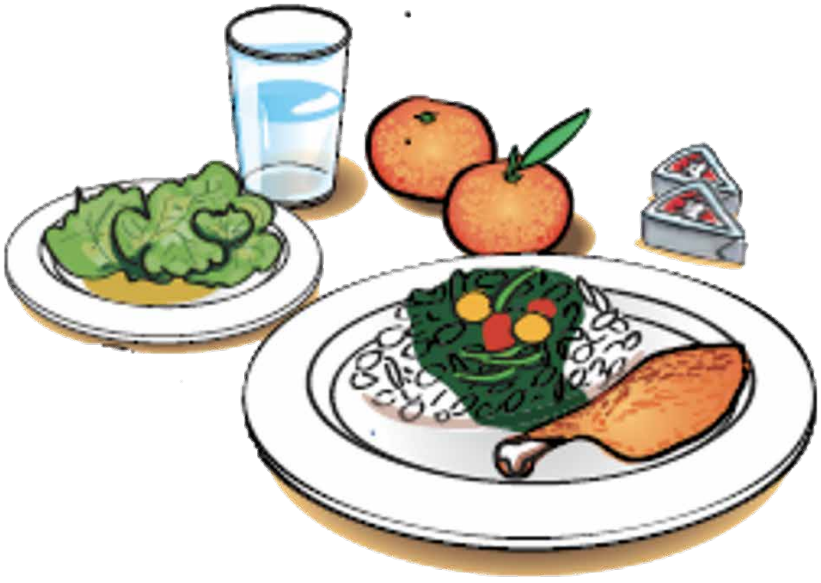
2 **Measure the foods containing carbs**

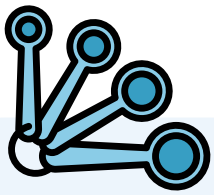
Use measuring cups, spoons or kitchen scales to measure how much of the carbohydrate food you will be eating e.g. 1 cup of rice and 2 oranges.

3 **Calculate the amount of carbohydrates**

Use this book, a list, phone app or food package labels to calculate the amount of carbohydrates you will consume.

Spot the carbohydrate containing foods –
rice and oranges





As with every new skill "practice makes perfect". The more attention you pay to carb counting the better you will get at it. It will be worth the effort!

Tools to help you count carbohydrates

- ✓ Websites and mobile apps such as NHS-INC (Indian Nutrient Counter) provide nutrition values of more than 5000 foods, available from Google Play store
- ✓ Measuring cups and spoons, kitchen food weighing scales
- ✓ Images of measuring cups and spoons
- ✓ Your dietitian, or diabetes care team can give you some helpful carbohydrate lists
- ✓ Section 2 and 3 of this booklet provide images of foods and the amount of carbohydrate in grams

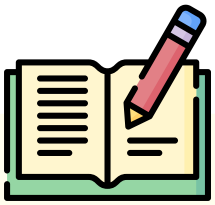
Make sure you check the volume of *your* measuring cups.

Do I have to weigh and measure foods all the time?

It is a good idea to measure your food portions initially to learn what your usual food portions are.

You may choose to keep measuring or weighing your foods all the time.

If you don't, it's a good idea to check your portion sizes regularly, or when you notice your/your child's blood glucose levels are fluctuating more than usual. This can indicate that insulin doses may need to be adjusted.



Tip!
You can keep a diary with the carbohydrate amounts you have calculated for different meals.

Food labels

Reading and understanding food labels on packaged foods can help you make healthy food choices. It can also help to calculate carbohydrate amounts and compare products.

The nutrition information panel provides details of how much carbohydrate, fat, protein and other nutrients is in that food. Not all food labels are the same. We have described one type below.

Serving size

This is the serving size suggested by the manufacturer. It may not be how much you, or your child eats. You need to calculate your own serve.

In this example the **serving size is ⅔ cup**. If you eat 2 servings of this food (2 x ⅔ cups = 1 ⅓ cup or 2 x 55g = 110g) then the total carbohydrate you eat would be 2 x 37g = 74g.

Nutrition Facts

8 servings per container

Serving size **2/3 cup (55g)**

Amount per serving

Calories **230**

	% Daily Value*
Total Fat 8g	**10%**
Saturated Fat 1g	**5%**
Trans Fat 0g	
Cholesterol 0mg	**0%**
Sodium 160mg	**7%**
Total Carbohydrate 37g	**13%**
Dietary Fiber 4g	**14%**
Total Sugars 12g	
Includes 10g Added Sugars	**20%**
Protein 3g	
Vitamin D 2mog	10%
Calcium 260mg	20%
Iron 8mg	45%
Potassium 240mg	6%

* The % Daily Value (DV) tells you how much a nutrient in a serving of food contributes to a daliy diet. 2,000 calories a day is used for general nutrition advice.

Total carbohydrate

This value includes starches, fiber and sugars in the food.

Use the 'Total Carbohydrate' and subtract the amount of 'Dietary Fiber' to calculate the net amount of carbohydrate you will eat. In this example, if you eat one serving size of this food (⅔ cup or 55g), your net carbohydrate amount would be 33g (i.e. 37g minus 4g of fiber).

Be Careful!
The serving size on the label is NOT always the same as the serving size you will eat. If your serving size is larger, the carbohydrate amount (g) will be more.

Ingredients

All the ingredients used in this product are listed here. They are **listed in order from most to least by weight**. Looking at this list helps determine whether a product is high in fat, sugar or salt.

Ingredients: Enriched flour (wheat flour, malted barley, niacin, reduced iron, thiamin monitrate, riboflavin, folic acid), sugar, partially hydrogenated cottonseed oil, high fructose corn syrup, whey (milk), eggs, vanilla, natural and artificial flavoring, salt, leavening (sodium acid pyrophosphate, monocalcium phosphate), lecithin (soy), mono- and diglycerides.

Beyond the basics of carbohydrate counting

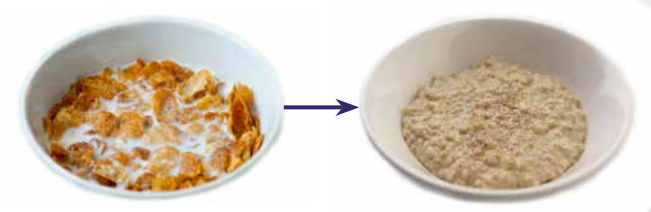
Once you have mastered the basics of carbohydrate counting it is important to learn about the impact of other food components on blood glucose levels.

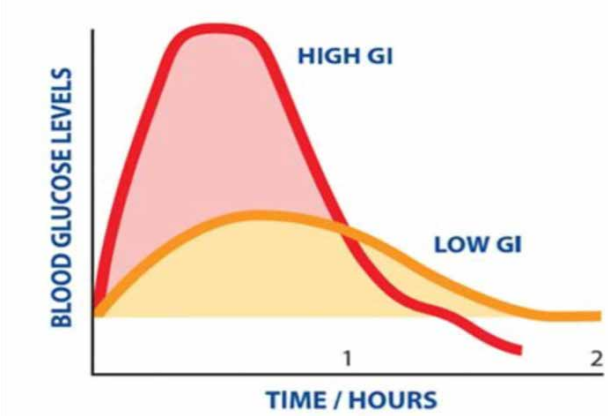
Glycemic Index

Different carbohydrates will cause your/your child's blood glucose to rise faster or slower. The glycemic index (GI) is a ranking of how quickly your/your child's blood glucose levels rises after eating a carbohydrate food.

Low GI carbs = Slower, lower rise in BGLs
High GI foods = Faster, higher rise in BGLs

It is important to include one low GI carbohydrate food at each meal or **switch** higher GI for lower GI foods.





For more information on Glycemic Index go to GI Foundation at www.gisymbol.com

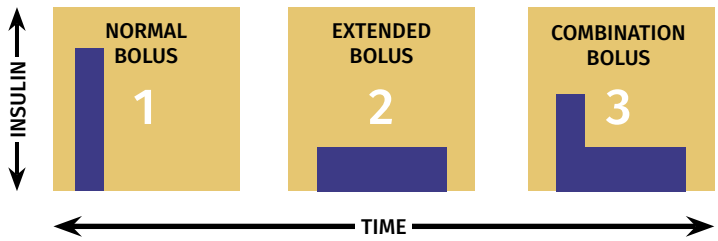
Fats and Protein

Meals that are high in protein and fat may cause high blood glucose levels commencing 3-5 hours after eating the meal. These meals may require extra insulin, in addition to what is needed for the carbohydrate portion of the meal alone.




If you are using an insulin pump, meals high in fat and protein may require a combination/dual-wave bolus (as shown in the picture No. 3 below).

It is best to get advice from your diabetes health care team regarding how to manage these foods.



Important!
Carbohydrates raise blood glucose levels more than protein or fat. It is important to get the carb counting right before you move on to consider fat and protein.

Eating out

Children and adults with diabetes can enjoy eating out with friends and family. Try to 'estimate' the amount of carbohydrate containing foods based on what you would usually eat at home. You may find carbohydrate amounts of foods from books, websites, phone apps, or the restaurant or cafe's website. You could also seek help from your health professional by deciding the menu in advance.

You will not always get it right and that is ok! You can make a note for next time.

Alcohol

- ✓ Do not give insulin for alcohol. Alcohol can cause delayed hypoglycaemia (low blood glucose) and this can be dangerous, particularly overnight.
- ✓ Limit intake to 1-2 standard drinks. If you drink more, your risk of hypoglycaemia increases.
- ✓ You may need to adjust insulin doses or eat more carbs to prevent hypos.
- ✓ Make sure you tell a responsible adult/friend if you are drinking alcohol and always wear a diabetes identification (ID).
- ✓ Too much alcohol can cause weight gain as it contains a lot of calories.
- ✓ Don't drink alcohol until you are of legal age.
- ✓ Don't drink and drive!

Warning!
Alcohol can cause delayed hypoglycaemia. If you have been drinking alcohol it is important to have carbohydrates before going to bed. Particularly if you have been exercising or been active, like dancing. Check your BGL more often, especially before going to bed and overnight!

Sweet alcoholic drinks

Some alcoholic drinks like sodas have lots of added sugar and will cause a temporary rise in BGLs. However, you are at risk of delayed hypoglycaemia even if you have this temporary spike. Be mindful if you are active while drinking alcohol (e.g. dancing). You may need to eat extra carbohydrate containing food. **Talk to your diabetes health care team for advice on how to stay safe when drinking alcohol.**

One standard drink is:

12 fl oz (350mL) of regular beer = **8 fl oz (240mL) of malt liquor** (shown in a 12 oz/ 350mL glass) = **5 fl oz (150mL) of table wine** = **1.5 fl oz (45ml) shot of 80-proof spirits** (whiskey, gin, rum, vodka, tequila, etc.)

about 5% alcohol

about 7% alcohol

about 12% alcohol

about 40% alcohol

Physical Activity

It is important to be physically active every day to maintain good health. Exercise can increase your/your child's risk of hypoglycaemia (low blood glucose) during and even many hours after exercising. Although, high intensity exercise such as strength training, skipping or heavy gardening work can temporarily raise blood glucose levels. So, it is important to check your blood glucose levels before, during and after exercise.

Follow these steps to get active safely:

Before

- ✓ Check blood glucose levels, aiming for 5-10 mmol/L (90-180 mg/dL).
- ✓ Have 10-20 grams of carbohydrate if blood glucose is below 5 mmol/L (90 mg/dL) or if you are exercising for more than 45 minutes.
- ✓ Pack your hypo treatment (e.g. glucose powder or tablets, juice, soft lollies, sugar, fruit, plain biscuit).

During

- ✓ Always wear or carry diabetes identification (e.g. a bracelet, necklace, card).
- ✓ Check blood glucose levels often.
- ✓ Drink lots of fluid – water is best.
- ✓ Consider having a drink or snack that contains carbohydrate if exercising for more than one hour or if doing more strenuous exercise (e.g. running, farm work etc).

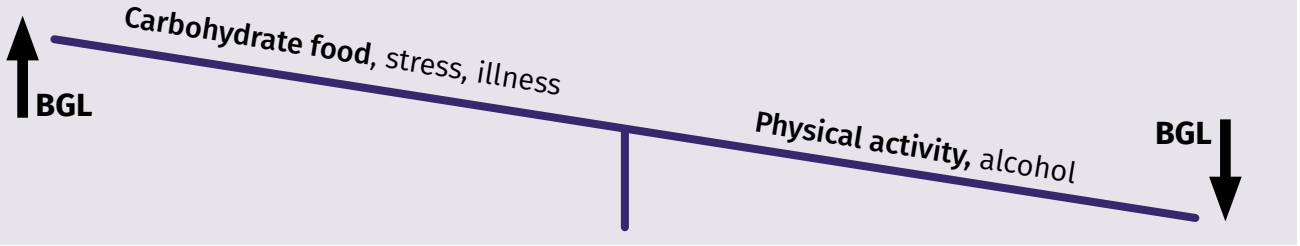
After

- ✓ Eat a snack containing carbohydrate and protein (e.g. yoghurt, a sandwich with nut butter or a meal with protein source & rice).
- ✓ Check blood glucose levels directly after the exercise, before going to bed and overnight.
- ✓ Do not drink alcohol! It increases the risk of delayed hypoglycaemia (even overnight).

Important

- ✓ Different exercises will affect your blood glucose levels in their own way. For example, high intensity exercise may cause BGL to rise initially and drop later, while swimming usually causes a decrease.
- ✓ Don't do high intensity exercise if your/your child's BGL is above 15mmol/L (270mg/dl). This can raise BGLs even more and be dangerous.
- ✓ Insulin doses can be reduced for planned activity to minimise the amount of additional carbs you/your child need to consume.
- ✓ Everyone is unique – the more you exercise and the more frequently you check your blood glucose levels, the better you'll know your body and how it responds.
- ✓ Always talk to your diabetes team for individualised advice!

Be Aware! Physical activity, stress, illness, and alcohol can also affect your blood glucose levels.



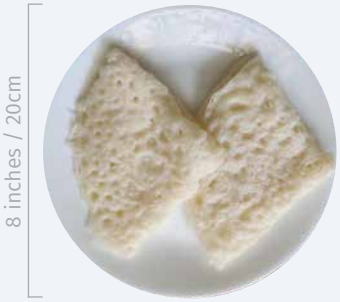
2 Carbohydrate foods commonly eaten in India

This section gives pictures and the amount of carbohydrates of some of the traditional and most common carbohydrate foods eaten in India. The carbohydrate values mentioned in this book are estimates only as many factors can affect the amounts, for example the method of preparation etc.

The following images are separated into breakfast and snack items, main courses, breads, rice preparations and desserts.

All bowl measurements used in this section refer to a **200ml bowl**.

Breakfast and Snack Items



Neer Dosa

2	150g	36g
number	weight	carbs

Appam

1	70g	20g
number	weight	carbs

Homemade Dosa

1	50g	15g
number	weight	carbs

Pesarattu

1	40g	8g
number	weight	carbs

Dosa with Sambhar

2 number ½ bowl	120g + 100g	50g total carbs

Sada Dosa with ½ bowl chutney & ½ bowl sambhar

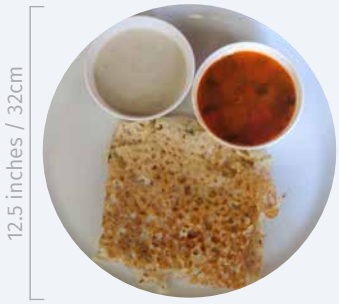
1	150g + 100g + 100g	65g total carbs
serving		

Masala Dosa with ½ bowl chutney & ½ bowl sambhar

1	270g + 100g + 100g	80g total carbs
serving		

Uttapam with ½ bowl chutney & ½ bowl sambhar

1	240g + 100g + 100g	90g total carbs
serving		



Rava Dosa with ½ bowl chutney & ½ bowl sambhar

1	150g + 100g + 100g	65g total carbs
serving		

8 inches / 20cm

Home made Idli

2	80g	15g
number	weight	carbs

8 inches / 20cm

Restaurant Idli

2	120g	22g
number	weight	carbs

8 inches / 20cm

Idli with Sambhar

4	120g + 1 bowl	40g total carbs
number		

8 inches / 20cm

Homemade Medu Vada

4	50g	15g
number	weight	carbs

8 inches / 20cm

Restaurant Medu Vada with Sambhar

4	120g + ½ bowl	65g total carbs
number		

8 inches / 20cm

Addu, Ponganalu, Kuzhi Paniyaram

3	60g	20g
number	weight	carbs

8 inches / 20cm

Rice Puttu

1	220g	80g
serving	weight	carbs

8 inches / 20cm

Ragi Puttu

1	220g	80g
serving	weight	carbs

8 inches / 20cm

Ragi Puttu

1	40g	15g
number	weight	carbs

8 inches / 20cm

Rice Puttu with Kadala

1	80g + 1 bowl	45g
serving		carbs

Bowl = 200ml

Rice Vermicelli/ Rice Seviyan

1	100g	25g
bowl	weight	carbs

Bowl = 200ml

Pongal

1	200g	30g
bowl	weight	carbs

Bowl = 200ml

Poha

1	80g	30g
bowl	weight	carbs

Bowl = 200ml

Upma

1	100g	30g
bowl	weight	carbs

Bowl = 200ml

Sabudana/ Sago Khichdi

1	120g	60g
bowl	weight	carbs

8 inches / 20cm

Homemade Sabudana/ Sago Wada

1	40g	15g
number	weight	carbs

8 inches / 20cm

Restaurant Sabudana Wada/ Sago Wada with sweet curd

1	240g + ¾ bowl	105g
serving		carbs

8 inches / 20cm

String Hoppers/ Idiyappam

1	50g	15g
number	weight	carbs

Chillas/Dal (pulse) dosas

2	90g	15g
number	weight	carbs

Moong dal vadas

5	40g	15g
number	weight	carbs

Chole (1 bowl) with 2 Bhatura

1	270g	160g
bowl	weight	carbs total
2	120g	
bhaturas	weight	

Onion Pakodas/Bhajias

1	120g	20g
serving	weight	carbs

Bhel (with 2 tsp sweet chutney)

1	160g	60g
serving	weight	carbs

Sev Puri (with potato and sweet chutney)

6	120g	90g
puris	weight	carbs

Pani Puri/Gol Gappa

(unsweetened, no potato, pulse only)

1	6	45g
serving	pieces	carbs

Batata Vada

1	80g	30g
number	weight	carbs

Punjabi Samosa

1	80g	30g
number	weight	carbs

8 inches / 20cm

Pav Bhaji

1 bowl	300g weight	55g total carbs
2 pav	70g weight	

12.5 inches / 32 cm

Missal Pav (1 ½ bowls) with 2 Pav

1 ½ bowls	370g missal	75g total carbs
2 pav	70g pav	
	30g Farsan	

12.5 inches / 32 cm

Dal Baati Churma

1 bowl	200g Dal	105g total carbs
4 baatis	80g Baati	
	20g Churma	

Bowl = 200ml

Ghugni/Ragda

1 bowl	220g weight	15g carbs

8 inches / 20cm

White Dhokla

4 pieces	60g weight	15g carbs

8 inches / 20cm

Khandvi

12 pieces	175g weight	15g carbs

8 inches / 20cm

Khaman Dhokla (unsweetened)

2 pieces	70g weight	15g carbs

8 inches / 20cm

Patra/Alu vadi (unsweetened)

4 pieces	120g weight	15g carbs

8 inches / 20cm

Muthias

7 small pieces	34g weight	15g carbs

8 inches / 20cm

Litti Chokha

1 bowl	200g weight	95g total carbs
4 litti	160g weight	

8 inches / 20cm

Kolkata Egg Roll

1 number	100g weight	15g carbs

8 inches / 20cm

Momos

6 pieces	180g weight	45g carbs

Bowl = 200ml

Roasted Chana

⅓ bowl	30g weight	15g carbs

8 inches / 20cm

Roasted Khakra

2 number	20g weight	20g carbs

8 inches / 20cm

Gathiya

1 serving	40g weight	15g carbs

Bowl = 200ml

Sev

¾ bowl	50g weight	15g carbs

8 inches / 20cm

Farsan

1 cup	40g weight	15g carbs

Bowl = 200ml

Kurmura (Puffed rice)

1 bowl	23g weight	15g carbs

Bowl = 200ml

Makhana (Fox nut)

1	23g	15g
bowl	weight	carbs

8 inches / 20cm

Handvo

4	84g	15g
pieces	weight	carbs

Bowl = 200ml

Sukha bhel/Jhalmuri

1	100g	20g
bowl	weight	carbs

Main Courses - Sprouts, Lentils, Curries, Chutneys & Kebabs

Bowl = 200ml

Sprouts

½	60g	15g
bowl	weight	carbs

Bowl = 200ml

Dal

½	100g	15g
bowl	weight	carbs

Bowl = 200ml

Rasam

1	200g	5g
bowl	weight	carbs

Bowl = 200ml

Chole

1	200g	30g
bowl	weight	carbs

Bowl = 200ml

Rajma Curry

1	280g	30g
bowl	weight	carbs

Bowl = 200ml

Kadala/Chana Masala/ Ussal

1	200g	15g
bowl	weight	carbs

Bowl = 200ml

Home Made Sambhar with vegetables

1	200g	15g
bowl	weight	carbs

Bowl = 200ml

Restaurant Sambhar (with sugar/jaggery)

½	100g	15g
bowl	weight	carbs

Bowl = 200ml

Tomato Saar

1	200g	5g
bowl	weight	carbs

Bowl = 200ml

Pitla

1	200g	15g
bowl	weight	carbs

Bowl = 200ml

Zunka

1	200g	15g
bowl	weight	carbs

Bowl = 200ml

Tomato Saar

1	200g	5g
bowl	weight	carbs

Bowl = 200ml

Veg Stew

1	190g	15g
bowl	weight	carbs

Bowl = 200ml

Sindhi Curry (with potato and yam)

1	240g	10g
bowl	weight	carbs

Bowl = 200ml

Curd/Dahi Curry

1	200g	5g
bowl	weight	carbs

Bowl = 200ml

Dal Dhokli

1	200g	35g
bowl	weight	carbs

Bowl = 200ml

Gatte ki sabji (5 no. Gatte)

1	200g	25g
bowl	weight	carbs

Bowl = 200ml

Vegetables (without potato)

1	200g	5g
bowl	weight	carbs

Bowl = 200ml

Carrot and Beans Poriyal

¾	200g	15g
bowl	weight	carbs

Bowl = 200ml

Chokha (with potato)

1	200g	15g
bowl	weight	carbs

Bowl = 200ml

Potato Veg

1	160g	30g
bowl	weight	carbs

Bowl = 200ml

Oondiyo / Undhiyu

1	100g	20g
bowl	weight	carbs

Bowl = 200ml

Sev Tamatar Vegetable

¾	200g	20g
bowl	weight	carbs

Bowl = 200ml

Fish Curry

1	200g	5g
bowl	weight	carbs

Bowl = 200ml

Chicken Handi

1	200g	5g
bowl	weight	carbs

Bowl = 200ml

Chicken/Mutton/ Meat Curry

¾	200g	5g
bowl	weight	carbs

Bowl = 200ml

Chicken/Mutton/ Meat Mince Kheema

¾	200g	5g
bowl	weight	carbs

Bowl = 200ml

Methi Matar Malai (Fenugreek Peas Veg)

¾	200g	15g
bowl	weight	carbs

Bowl = 200ml

Dal Makhani

¾	200g	25g
bowl	weight	carbs

Bowl = 200ml

Green Leafy Veg

¾	200g	5g
bowl	weight	carbs

Bowl = 200ml

Chutney (applies for all chutneys)

½	100g	<5g
bowl	weight	carbs

8 inches / 20cm

Baingan Baja

6	100g	4g
pieces	weight	carbs

8 inches / 20cm

Chicken Kebab

4	100g	5g
pieces	weight	carbs

8 inches / 20cm

Fish/Chicken Cutlets

4	140g	20g
pieces	weight	carbs

1 level teaspoon of Honey / Jaggery / Sugar

1	approx 5g
level teaspoon	carbs

If you add any sugar, honey or jaggery to the food you cook, you will need to add it to your carb count.

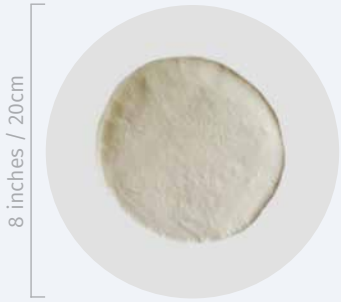
Hand Breads and Breads

Chapati

1	40g	15g
number	weight	carbs

Millet Bhakri/Roti

1	50g	20g
number	weight	carbs



Rice Bhakri

1	50g	20g
number	weight	carbs

Puris

2	30g	15g
number	weight	carbs

Bhatura

1	100g	60g
number	weight	carbs

Kulcha

1	60g	30g
number	weight	carbs

Naan

1	100g	50g
number	weight	carbs

Thalipeeth

1	50g	15g
number	weight	carbs

Thepla

1	25g	15g
number	weight	carbs

Koki

1	50g	15g
number	weight	carbs

Luchi

1	27g	15g
number	weight	carbs

Ragi Mudde

1	50g	20g
number	weight	carbs

Plain Paratha

1	40g	15g
number	weight	carbs

Veg Paratha

1	70g	15g
number	weight	carbs

Aloo Paratha

1	80g	30g
number	weight	carbs

Dal/Sattu Paratha

1	50g	20g
number	weight	carbs

Goan Bread - Poee

1	75g	30g
number	weight	carbs

Pav

1	35g	15g
number	weight	carbs

Baati

1	20g	13g
number	weight	carbs

Litti

1	40g	20g
number	weight	carbs

Rice Preparations

1 bowl = 200ml

Plain Steamed Rice

1	110g	30g
bowl	weight	carbs

Khichdi

1	280g	35g
bowl	weight	carbs

Bisi bele bath

¾	200g	25g
bowl	weight	carbs

Bowl = 200ml

Curd rice

1	260g	30g
bowl	weight	carbs

Bowl = 200ml

Pakhala/Panta Bhaat

1	200g	20g
bowl	weight	carbs

8 inches / 20cm

Egg/Chicken Biryani

1 ½	170g	30g
bowls	weight	carbs

8 inches / 20cm

Pulao

1	170g	30g
bowl	weight	carbs

Desserts

Modak

1	40g	20g
number	weight	carbs

Puran Poli

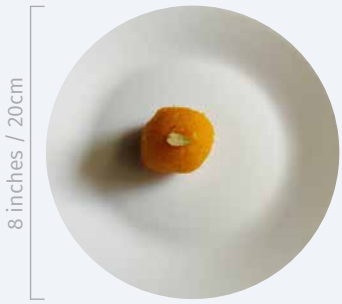
1	50g	40g
number	weight	carbs

Peda

1	20g	13g
number	weight	carbs

Kaju Katli

1	10g	6g
number	weight	carbs



Motichoor Ladoo

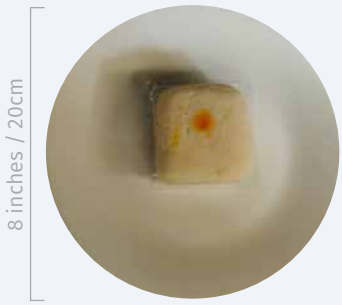
1	40g	24g
number	weight	carbs

Besan Ladoo

1	40g	31g
number	weight	carbs

Gulab Jamun (without sugar syrup)

1	60g	20g
number	weight	carbs



Sandesh

1	80g	15g
number	weight	carbs

Rasgulla (without sugar syrup)

1	40g	15g
number	weight	carbs

Mishti Doi

½	80g	15g
cup	weight	carbs

Jalebi

4	40g	22g
number	weight	carbs

Shrikand

½	100g	16g
cup	weight	carbs

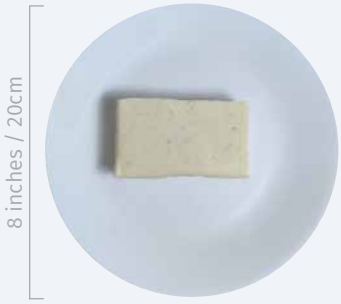
Milk and Milk Products

Buffalo Milk

120ml	10g
volume	carbs

Cows Milk

200ml	10g
volume	carbs



Cottage Cheese/Paneer

1	85g	10g
piece	weight	carbs

Curd

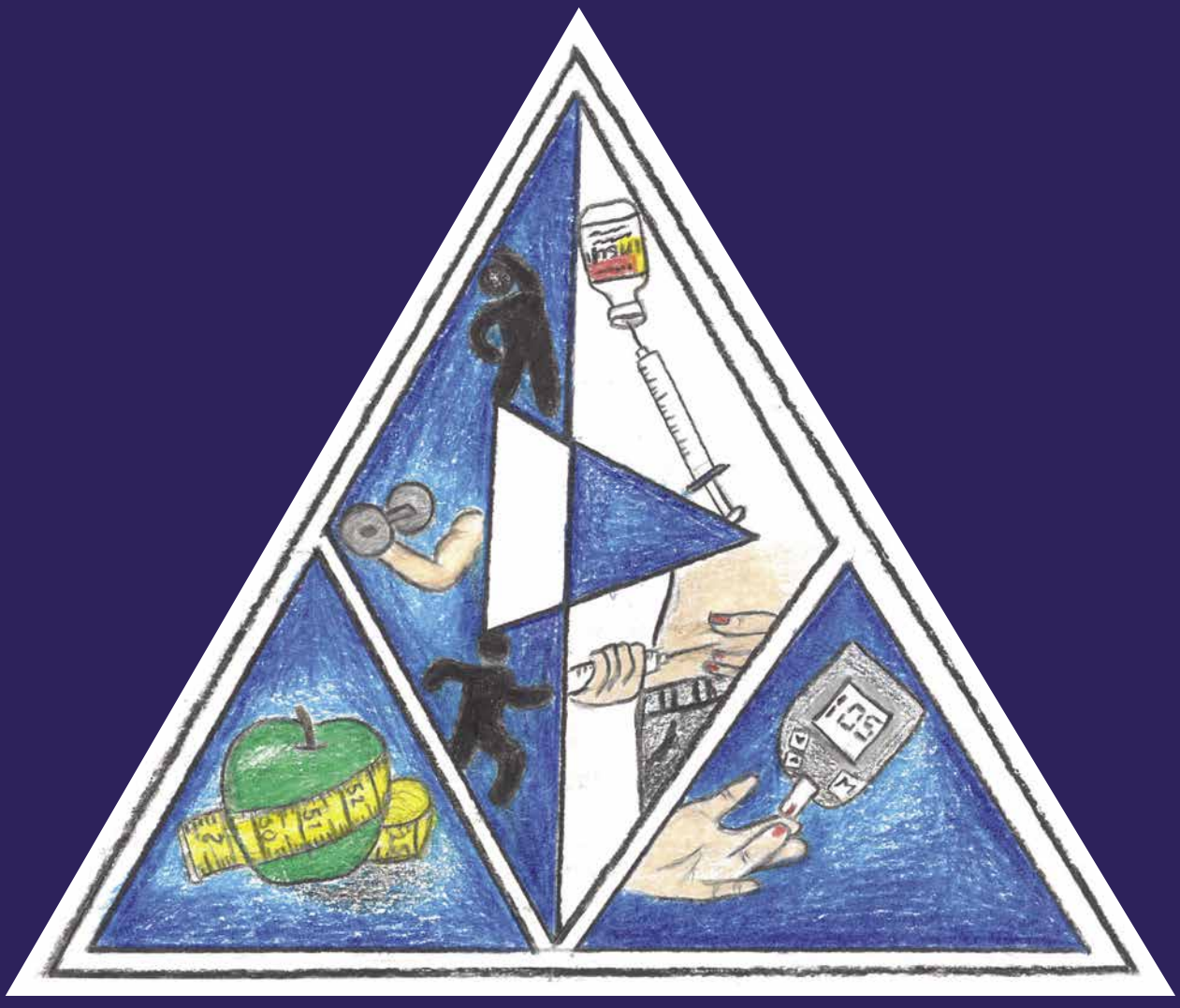
1	250g	10g
bowl	weight	carbs

3 Carbohydrates in common international foods

The first part of this section (pages 42 - 47) shows images of common fruit, bread, cereals, grain products, starchy vegetables, legumes and pulses, milk, dairy or dairy alternatives that contain approximately 15g of carbohydrates.

All cup measurements used in this section refer to a **250ml cup**.

The second part (pages 48 - 53) provides examples of common Italian, Asian, Mexican and other common restaurant or take away dishes as well as cakes, snack and bakery foods. The images indicate a serving size with the weight of the food, and the approximate amount of carbohydrates they contain.



Fruits

Apple

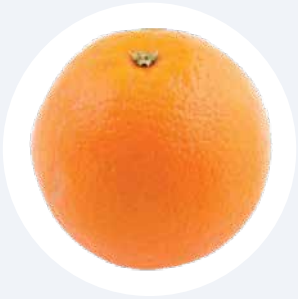
1	135g	15g
small	weight	carbs

Banana

1	130g	15g
small	weight	carbs

Pear

1	200g	15g
medium	weight	carbs



Orange

1	205g	15g
medium	weight	carbs

Mandarins

2	98g	15g
small	weight	carbs

Dates / Medjool dates

4/1.5	20g/24g	15g
dates	weight	carbs

Kiwi fruits

2	78g	15g
small	weight	carbs

Dried figs

2	29g	15g
figs	weight	carbs

Lychees

6	120g	15g
lychees	weight	carbs

1 cup = 250ml

Cherries

14	145g	15g
cherries	weight	carbs

Peaches in pear juice, drained

1	210g	15g
cup	weight	carbs

Rockmelon (Muskmelon)

2	300g	15g
cups	weight	carbs

Cup = 250ml

Grapes

20	100g	15g
small	weight	carbs

Cup = 250ml

Mango

½	120g	15g
cup	weight	carbs

Cup = 250ml

Strawberries

2	240g	8g
cups	weight	carbs

Pineapple

2	180g	15g
slices	weight	carbs

Watermelon

2	220g	15g
slices	weight	carbs

Pomegranate

½	130g	15g
cup	weight	carbs

Bread, Cereals and Grain Products

Slice of bread

1	34g	15g
slice	weight	carbs

Half Bread Roll

½	32g	15g
roll	weight	carbs

Chapatti

1	40g	15g
chappati	weight	carbs

Lebanese Bread

⅓	30g	15g
slice	weight	carbs

French Stick Bread

2	32g	15g
slices	weight	carbs

Bowl = 18cm / 7inch

Rice (cooked)

⅓	55g	15g
cup	weight	carbs

10.6 inches / 27cm

Pancake

1	43g	15g
pancake	weight	carbs

Bowl = 18cm / 7inch

Spaghetti (cooked)

⅓	55g	15g
cup	weight	carbs

Bowl = 18cm / 7inch

Porridge (cooked)

½	130g	15g
cup	weight	carbs

Bowl = 18cm/ 7inch

Couscous (cooked)

⅓	50g	15g
cup	weight	carbs

Muesli (no sugar added)

½	40g	30g
cup	weight	carbs

Check the food label of your muesli!

Bowl = 18cm/ 7inch

Cooked Noodles (e.g. Egg or Hokkein)

⅓	55g	15g
cup	weight	carbs

Cornflakes

¾	20g	15g
cup	weight	carbs

Starchy vegetables, legumes and pulses

Corn cob

1	143g	15g
small	weight	carbs

Mashed Potato

½	105g	15g
cup	weight	carbs

Sweet Potato (steamed)

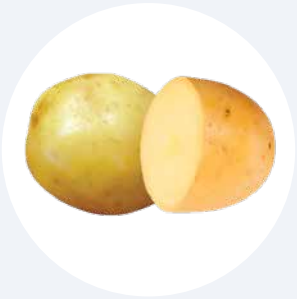
3	110g	15g
pieces	weight	carbs

Pumpkin (steamed)

9	216g	15g
pieces	weight	carbs

Potato Salad

½	90g	15g
cup	weight	carbs



Potato

1 ½	135g	20g
small	weight	carbs

Corn Kernels

½	80g	15g
cup	weight	carbs

Pumpkin Soup

1	200g	15g
cup	weight	carbs

Bowl = 18cm/ 7inch

Brown Lentils (cooked)

½	90g	15g
cup	weight	carbs

Bowl = 18cm/ 7inch

Baked Beans

½	135g	15g
cup	weight	carbs

Milk, Dairy and Dairy Alternative products

Cows Milk

1	250ml	15g
cup	volume	carbs

Flavoured Milk

¾	180ml	15g
cup	volume	carbs

Milk Powder

¼	4	15g
cup	heaped tablespoons	carbs

Bowl = 18cm/ 7inch

Plain Greek Yoghurt

1 ½	400g	15g
cups	weight	carbs

Bowl = 18cm/ 7inch

Flavoured Greek Yoghurt (e.g. strawberry)

⅔	170g	15g
cup	weight	carbs

Bowl = 18cm/ 7inch

Fruit Yoghurt (average of all flavours)

½	130g	15g
cup	weight	carbs

Bowl = 18cm/ 7inch

Plain Natural Yoghurt

1 ⅓	300g	15g
cups	weight	carbs

Italian restaurant or take away dishes

Lasagne
(with 4 pasta layers)

1	350g	39g
serve	weight	carbs

Pizza
(large, thick crust)

1	⅛	190g	39g
slice	large pizza	weight	carbs

Calzone

1	283g	80g
serve	weight	carbs

Pasta meal (chicken, broccoli and mascarpone)

1	267g	40g
cup	weight	carbs

Tiramisu

1	90g	24g
small slice	weight	carbs

Spaghetti Bolognese

1 ½	300g	45g
cups	weight	carbs

Asian restaurant or take away dishes

Rice Paper Roll
Chicken or prawn with salad and rice noodles

1	90g	11g
roll	weight	carbs

Sushi Hand Roll

1	115g	26g
roll	weight	carbs

Spring Roll

1	20g	4g
roll	weight	carbs

Sweet and Sour Pork

1	115g	22g
cup	weight	carbs

Massaman Curry
(including 2 potato pieces)

1	180g	20g
cup	weight	carbs

Green Curry

1	250g	15g
cup	weight	carbs

Fried Rice

1	165g	45g
cup	weight	carbs

Singapore Noodles

1	115g	30g
cup	weight	carbs

8 inches / 20cm

Meat Chow Mein

1	275g	40g
serve	weight	carbs

10.2 inches / 26cm

Chicken, prawn and pineapple rice

1 ½	250g	69g
cups	weight	carbs

10.2 inches / 26cm

Nasi Goreng

1 ⅓	340g	61g
cups	weight	carbs

10.2 inches / 26cm

Prawn Nigiri

1	30g	9g
piece	weight	carbs

10.2 inches / 26cm

Pork Gyoza

3	48g	15g
pieces	weight	carbs

Mexican restaurant or take away dishes

10.2 inches / 26cm

Bean Burrito

1	200g	60g
quantity	weight	carbs

8 inches / 20cm

Meat Enchilada

1	227g	41g
quantity	weight	carbs

8 inches / 20cm

Chicken Fajita

1	160g	27g
quantity	weight	carbs

10.2 inches / 26cm

Meat Taco

1	80g	10g
quantity	weight	carbs

8.6 inches / 22cm

Nachos with cheese

15	150g	21g
corn chips	weight	carbs

Common international eating out or take away

Hot Chips

25	110g	35g
chips	weight	carbs

8 inches / 20cm

Battered Fish

1	135g	14g
serving	weight	carbs

8 inches / 20cm

Fried Chicken (battered)

2	225g	12g
pieces	weight	carbs

Falafel Ball

2	90g	12g
quantity	weight	carbs

Chicken Schnitzel

1	130g	14g
quantity	weight	carbs

Garlic Bread

1	30g	13g
slice	weight	carbs

Quiche

(23cm diameter)

⅛	190g	32g
quiche	weight	carbs

Turkish Bread

1	90g	40g
large slice	weight	carbs

Cakes, snacks and bakery foods

Chocolate Cake

1	100g	46g
slice (1/12th cake)	weight	carbs

Doughnut

1	55g	22g
quantity	weight	carbs

Cupcake

1	70g	39g
quantity	weight	carbs

Muffin

1	130g	63g
quantity	weight	carbs

Ice Cream

2	85g	24g
scoops	weight	carbs

Croissant

1	80g	28g
quantity	weight	carbs

Apple Danish

1	87g	39g
serving	weight	carbs

Potato Chips

1	12	27g	12g
small bag	chips	weight	carbs

Almonds

24	28g	6g
almonds	weight	carbs

Milk Chocolate

6	33g	18g
squares	weight	carbs

Carrot Cake

1	60g	32g
slice (1/12th cake)	weight	carbs

Fruit Cake

1	50g	30g
small piece	weight	carbs

SECTION ONE ARTWORK (page 7)

Tips on living a regular lifestyle to control type 1 diabetes

Self-care is our responsibility – 1) Taking insulin, 2) Frequent blood sugar monitoring, 3) Eating healthy food, and 4) Exercise regularly and maintaining a healthy weight.

Anam Azim Shaikh, India

I am 13 years old and live in India. I was diagnosed with diabetes when I was just 8 years old. I live with my father, my mother, and my younger brother. I am currently in grade 9. My father works as a football coach for small children and my mother is a housewife. My father lost his job due to the ongoing covid-19 crisis and now works as a part-time delivery boy.

I have a regular daily routine: I get up early in the morning to do exercise/yoga with my mother and have a healthy breakfast with dry fruits and a lot of water to keep hydrated. I also have a well-balanced dinner at night. I always try to maintain my blood sugar. Whenever I get hypo or hyper blood sugar levels, I start shaking, sweating, get dizzy, anxious, hungry, have fast heartbeat, weakness, headache and irritation which affects my health.

SECTION TWO ARTWORK (page 23)

Life Balance

The painting consists of three elements: the person, the rope and the blue circle. The person with their unique life experiences - joys, sorrows, abilities, imperfections, talents, and with the heart at the centre. The tightrope represents life challenges and instabilities that need enthusiasm and courage to keep going like the constant balance (diet, physical activity) that a person with diabetes must maintain to stay healthy. The blue circle represents the symbol of world diabetes day, the blue colour emulating the sky under which we are all live, representing unity.

Mychel Fernandez Montenegro, Bolivia

I was born in Cochabamba, Bolivia in 1994 as the youngest of 4 children. After finishing school I studied architecture at the University Mayor de San Simón and graduated in 2020.

I was diagnosed with Type 1 diabetes aged 18, following poorly treated tonsillitis that lead to a diabetic coma. After I recovered, my family and I had to make some lifestyle changes that in a certain way helped us all, especially in terms of healthy eating.

At first it was hard to face this new reality, mainly due to the lack of knowledge about diabetes until through a friend I became part of the ‘Living with Diabetes’ Center Youth program where they gave us a lot of emotional and educational support and supplies to control the disease. They become a second family to which we will always be very grateful.

SECTION THREE ARTWORK (page 41)

Marking the steps for my health

My drawing shows what I have learned at the AMD Guerrero Association to maintain my glucose control and continue to take care of myself by applying those steps every day in my life.

Ángel Gabriel Bello Mundo, Mexico

I was born in 2003 and live in Acapulco Guerrero México. I was diagnosed with type 1 diabetes in 2015. It all started when one day at school I fell asleep. The teacher and the students didn't want to wake me up and then my mother took me to the doctor. From then on, I started using insulin. At first it was horrifying because I didn't want to inject myself, but over time I have learned that I have no choice. I keep track of my diet and changed my lifestyle.

Thanks to my family and the Mexican Diabetes Association in the State of Guerrero I have acquired the knowledge for my life condition.

At present I study high school and I continue to take care of myself doing a lot of exercise.

BACK COVER ARTWORK

Life has challenges, not obstacles

I created this drawing to illustrate that diabetes came into my life unexpectedly. I had to overcome many challenges such as getting accustomed to a healthy diet. I chose the brush and canvas to redraw the path that had suddenly changed my life. Overcoming challenges and building my future to achieve my life goals is shown in the drawing.

Gihan Satharasingha, Sri Lanka

My name is Gihan Malshan Satharasingha. I grew up in Horana, Sri Lanka and was educated at Taxila Central College. I entered the University of Moratuwa in 2020 to pursue a higher degree in Architecture and am now a second-year student.

When I was diagnosed with chronic diabetes in 2009, aged 11, it was a turning point in my life. As a child I had a very difficult time, but I slowly adjusted to life with diabetes and started to see it as a challenge. Now I'm moving on towards achieving my goals and objectives in life. I consider having to adjust to a healthy diet as 'a good side effect' of having diabetes.

Having become an artist, I will not stop there but I am moving forward with the goal of becoming a meaningful artistic young architect to the world.

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