

# Combining Exercise & Nutrition in the management of Diabetes

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# Medical Nutrition Therapy

- Medical nutritional therapy (MNT) plays an important role in managing diabetes
- This is achieved by a healthy eating pattern that provides the body with sufficient water, energy, macro- and micronutrients
- Sufficient nutrients are necessary to improve overall quality & sustainability of the individualized dietary approach





## What is Nutrition

- Is the practice of consuming food to provide our bodies with energy and nutrients
- The body utilizes nutrients through a process called metabolism which involves
  - breaking down of food (catabolism) to repair and create cells & tissues (anabolism) and
  - to provide the body with energy
- Combination of nutrients consumed at right amount from healthy food items is important to achieve optimal health and body function



# What are nutrients

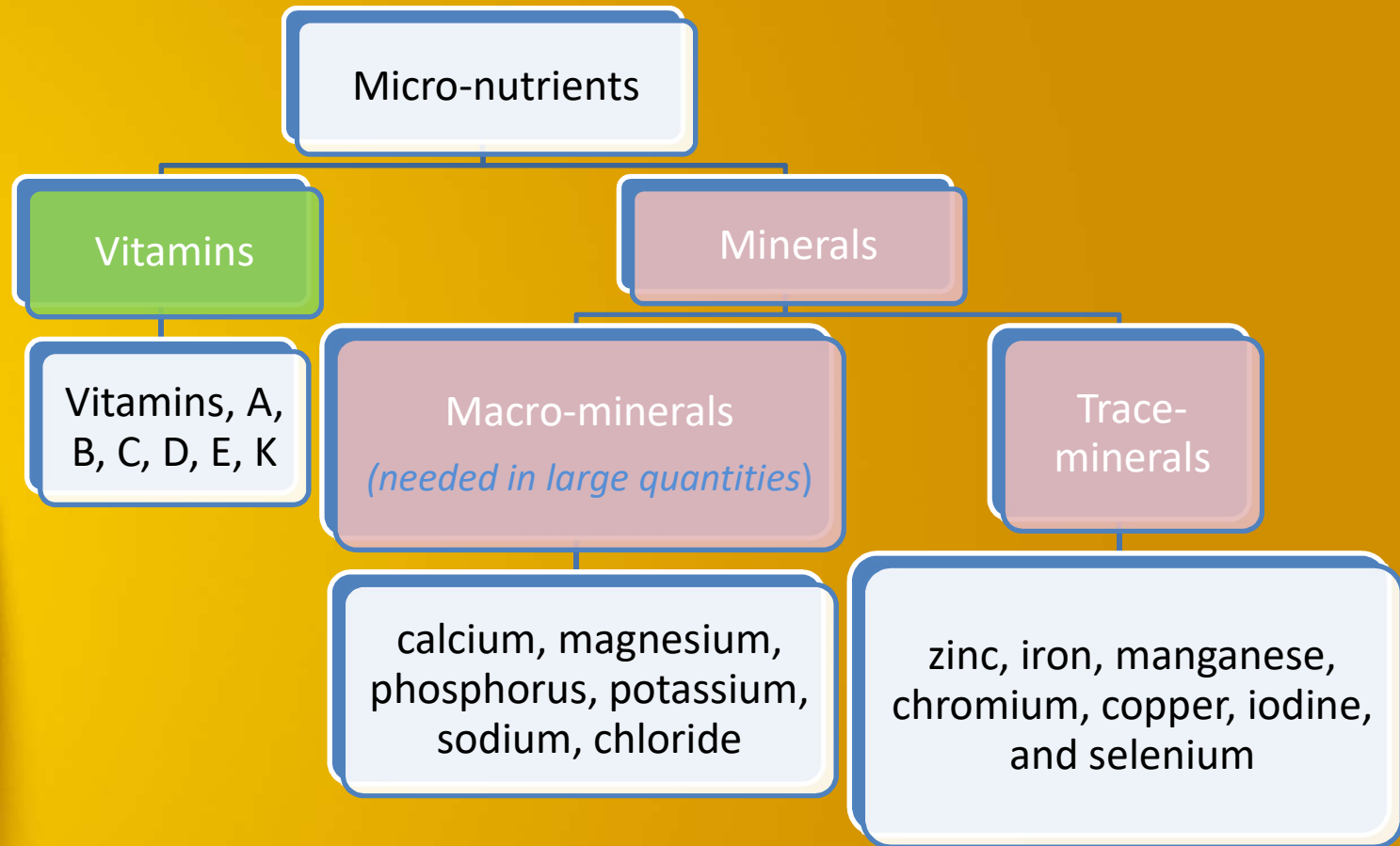
- ❑ Nutrients are divided into two main groups:
  - Macro-nutrients &
  - Micro-nutrients
- ❑ Macro-nutrients are essential to the body & relatively needed in large amounts
  - they are the main source of energy
  - helps the body to grow/develop, and to repair muscles, cells and tissues
  - Sources are:
    - Energy providing sources
      - carbohydrates, proteins, and lipids (fats)
    - Water: provides the body fluid and helps to regulate body temperature



## Micro-nutrients

- Micronutrients are equally important as macro-nutrients, but needed in smaller quantities
  - They regulate metabolism, heartbeat, cellular pH, and bone density
  - help to maintain energy levels for physical & mental wellbeing
  - enable the body to produce enzymes, hormones and other substances essential for proper growth and development

# What Constitutes as Micro Nutrients





# Getting to know Macro-Nutrients

- Fats
  - Healthy fats are important for:
    - improving brain development
    - overall cell functioning
    - protecting the body's organs and
    - Helps the body absorb fat-soluble vitamins (Vitamin A, E, D and K).
- Healthy fats include:
  - Nuts, seeds, olives, avocados
  - Plant-based cooking oils
  - Spreads such as margarine, peanut butter





## Macro-nutrients - Protein

- Protein is essential for:
  - repairing and regenerating body tissues & cells
  - Support a healthy functioning immune system
  - and assist the body in making hormones
- Growth and repair functions of the body require proteins
- **Sources of protein:**
  - Beans, pulses and legumes, seeds, nuts, quinoa, meat, fish, chicken, eggs, milk



## Macro-nutrients - Carbohydrates

- Carbohydrates are broken down into glucose for the body to use as a primary source of energy source
  - The brain and our central nervous system requires a continuous supply of glucose
  - Carbohydrates also provides the body with fibre, important for digestion
- **Sources of Carbohydrates are:**
  - Starches, sugar, fruits, milk & yoghurt





## South African Food Based Dietary Guidelines also used for Diabetes

- Enjoying a variety of foods
- Be active
- Making starchy foods part of most meals
- Eat plenty of vegetables and fruit every day, to provide the body with enough vitamins & minerals
- Eat dry beans, split peas, lentils and soya regularly
- Have milk, maas or yoghurt every day
- Fish, chicken, lean meat and eggs can be eaten daily
- Drink lots of clean, safe water
- Use salt and foods high in salt sparingly
- Use fats sparingly
- Choose vegetable oils, rather than hard fats
- Use sugar and foods and drinks high in sugar sparingly
- If you drink alcohol, drink sensibly
  - 1 unit per day for women and 2 units per day for men

# Alcohol standards

- 1 drink = 125ml wine, 330/340ml lite beer, 1 tot (25ml) spirit



...and some drinks are more than one Standard Drink 10g of pure alcohol



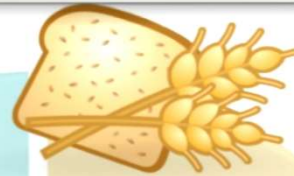


# Healthy Portion Plate



## Vegetables and Leafy Salads

- 1 Fill half your plate with vegetables and salads for fullness without calories.
- 2 Prepare a variety of vegetables—fresh, frozen, canned, cooked or raw.



## Whole-Grains and Whole Food Starches

- 3 Choose whole-grains and whole food starches for fullness from fiber.

## Meats and Protein Rich Foods

- 4 Add meats and other protein rich foods for satiety.
- 5 Make it lean—bake, broil, roast and grill it but don't fry it.





# How do we manage Diabetes

- Individualized nutrition therapy is recommended for the management of diabetes
  - to improve quality of life
  - Promote & support healthful eating patterns with emphasis on:
    - variety of nutrient-dense food choices and
    - portion control
  - Improve health outcomes with focus on:
    - Improving and/or maintaining glycaemic targets
    - Achieving weight management goals
    - Improving cardiovascular risk factors, such as hypertension and lipid profile

# Improving and/or maintaining glycaemic targets

- The anticipated A1c reduction with Medical Nutrition Therapy between 3 – 6 months is
  - up to 2.0% in individuals living with T2DM
  - And up to 1.9% in individuals living with T1DM
  - *Evert et al. (2019) "Nutrition Therapy for Adults with Diabetes or Prediabetes- A consensus Report"*
- Ongoing follow-up visits are important
  - to review or modify interventions when needed as life circumstances changes
  - To achieve long-term maintenance of glycaemic control





## Achieving or maintaining weight management goals

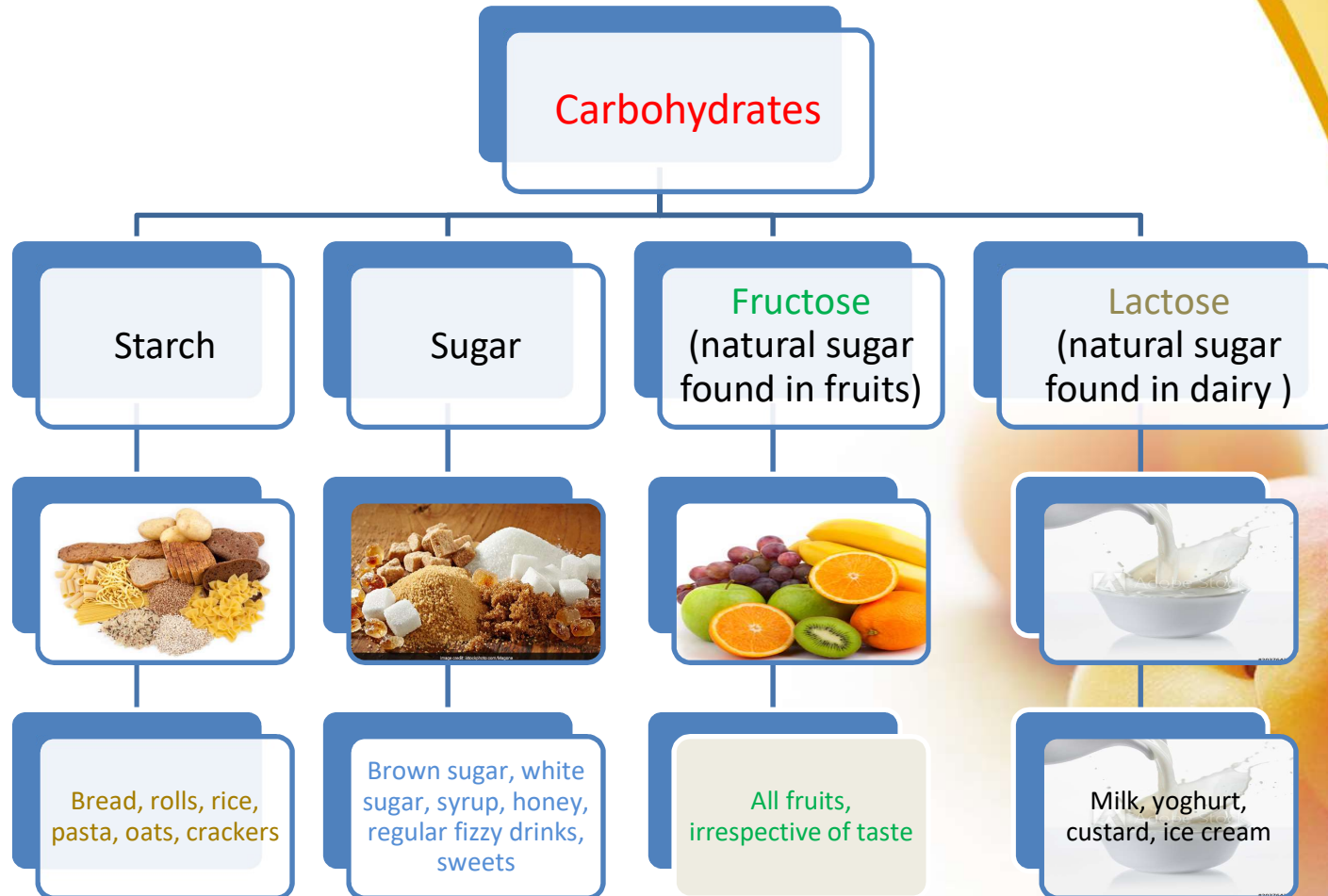
- For overweight or obese adults, reducing total energy intake from carbohydrates, fat, protein and alcohol has been shown to promote weight loss
- Total energy/ Calorie requirement should be individualised
  - to achieve 5-10 % weight loss of the initial body weight or  $\geq 15$  % weight loss
- Weight management through MNT need to be incorporated with at least 150 min per week of physical activity



## What influences individualized nutrition therapy

- Cultural backgrounds
- Personal preferences
- Literacy and numeracy
- Access to healthful food choices
- Willingness and the ability to make behavioral changes
- Barriers to change
- Comorbidities
- Financial status

# What influences glycaemic response?



# Both simple and complex carbohydrates affects blood glucose reading

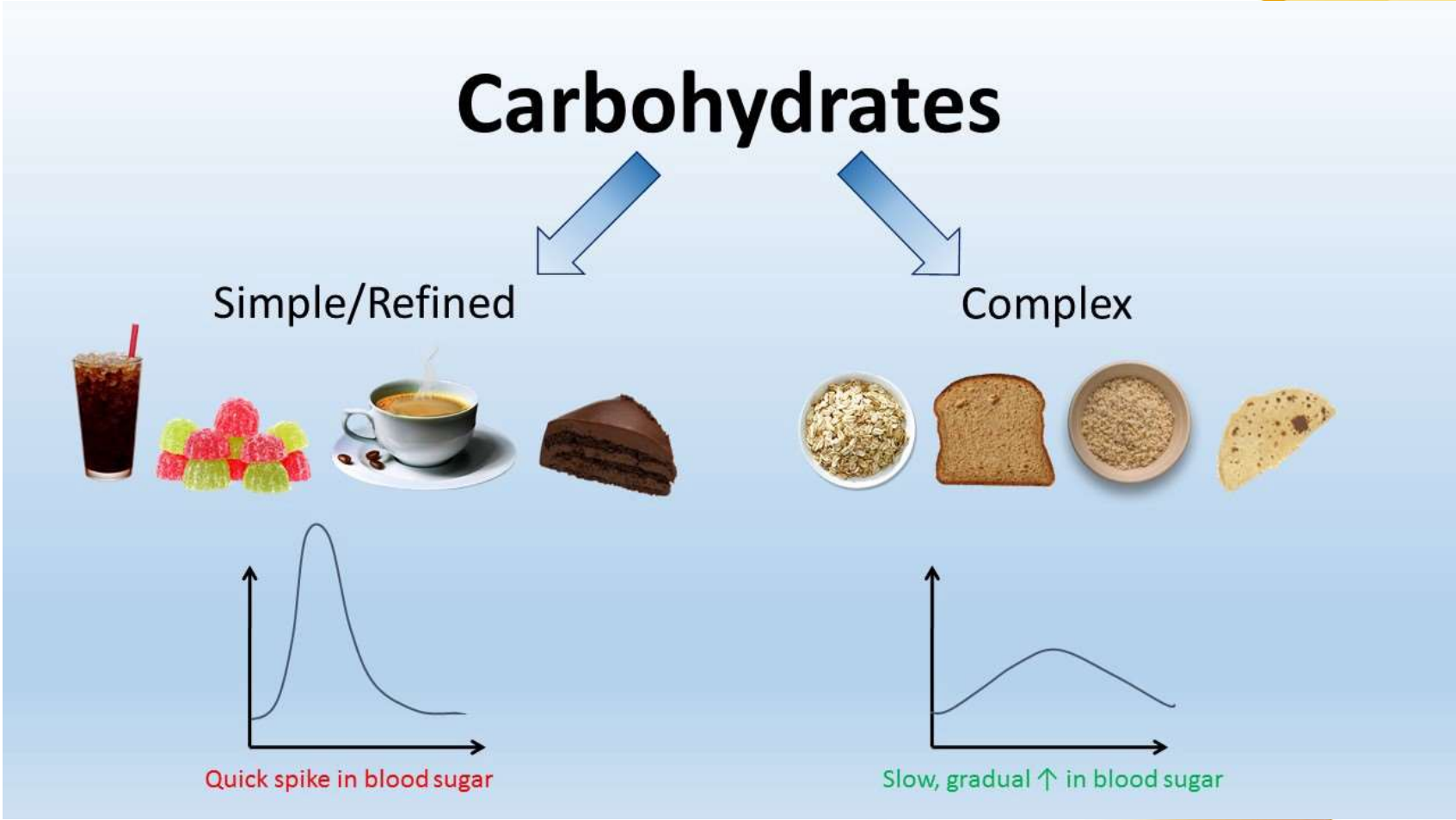


- Simple Carbohydrates



- Complex Carbohydrates

# Effects of carbs on Glucose response



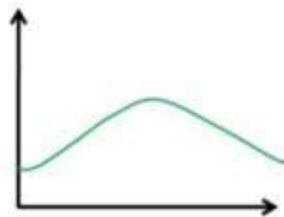
# Fruit and Glycaemic response

## Whole Fruit Vs. Fruit Juice



1 Medium-Sized Apple (130g)

90 kcal  
15g carbohydrates  
4g fibre

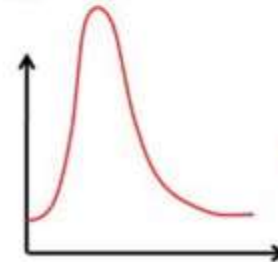


Slow, gradual ↑ in blood sugar



1 Glass Cloudy Apple Juice (330ml)

↑ 150 kcal  
↑ 35g carbohydrates  
↓ 2g fibre



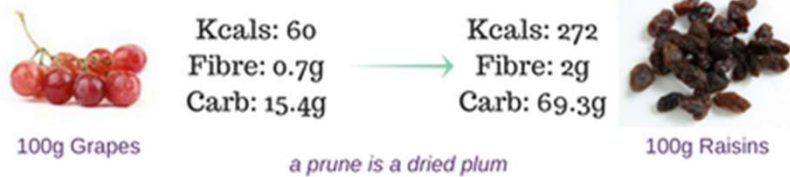
Quick spike in blood sugar

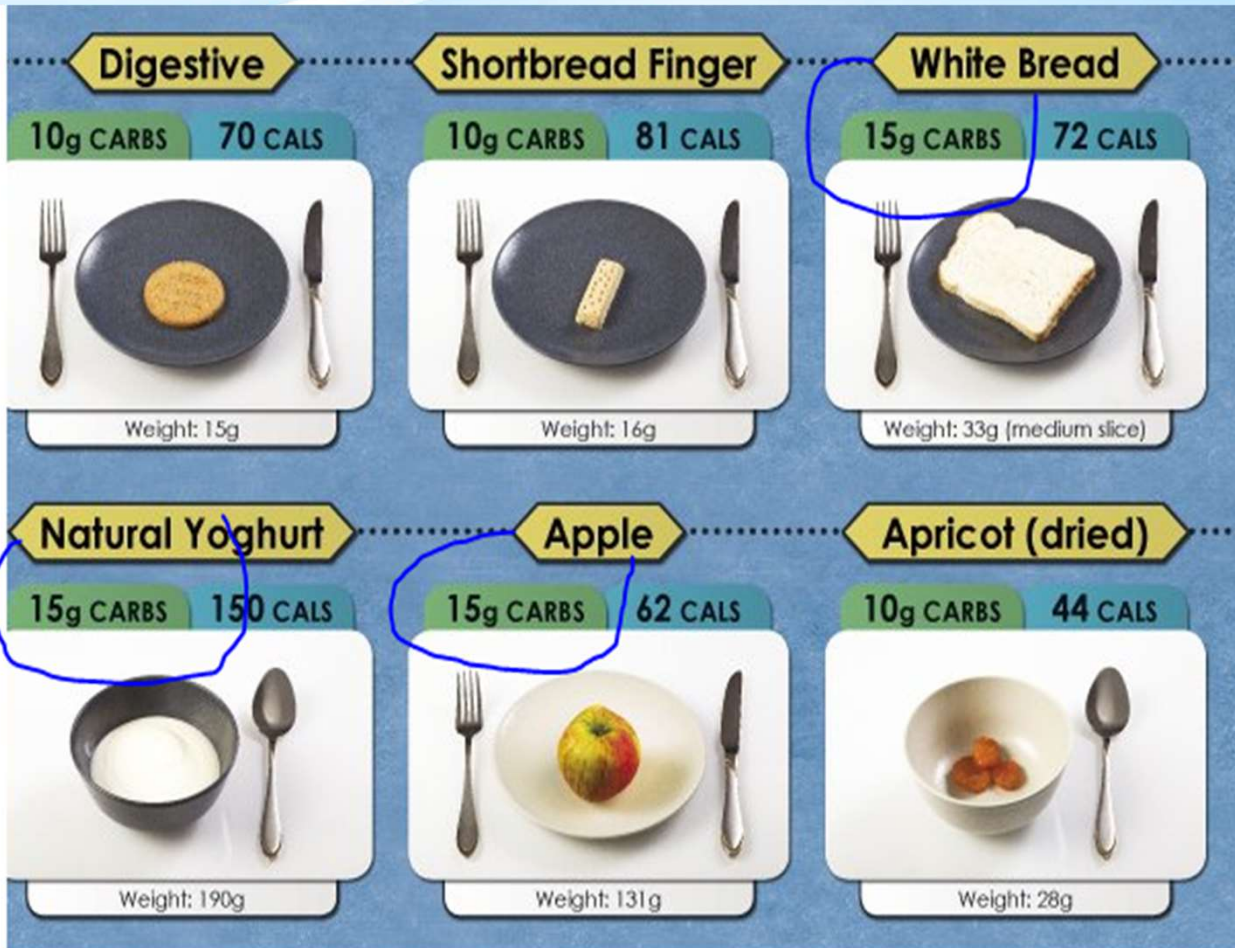


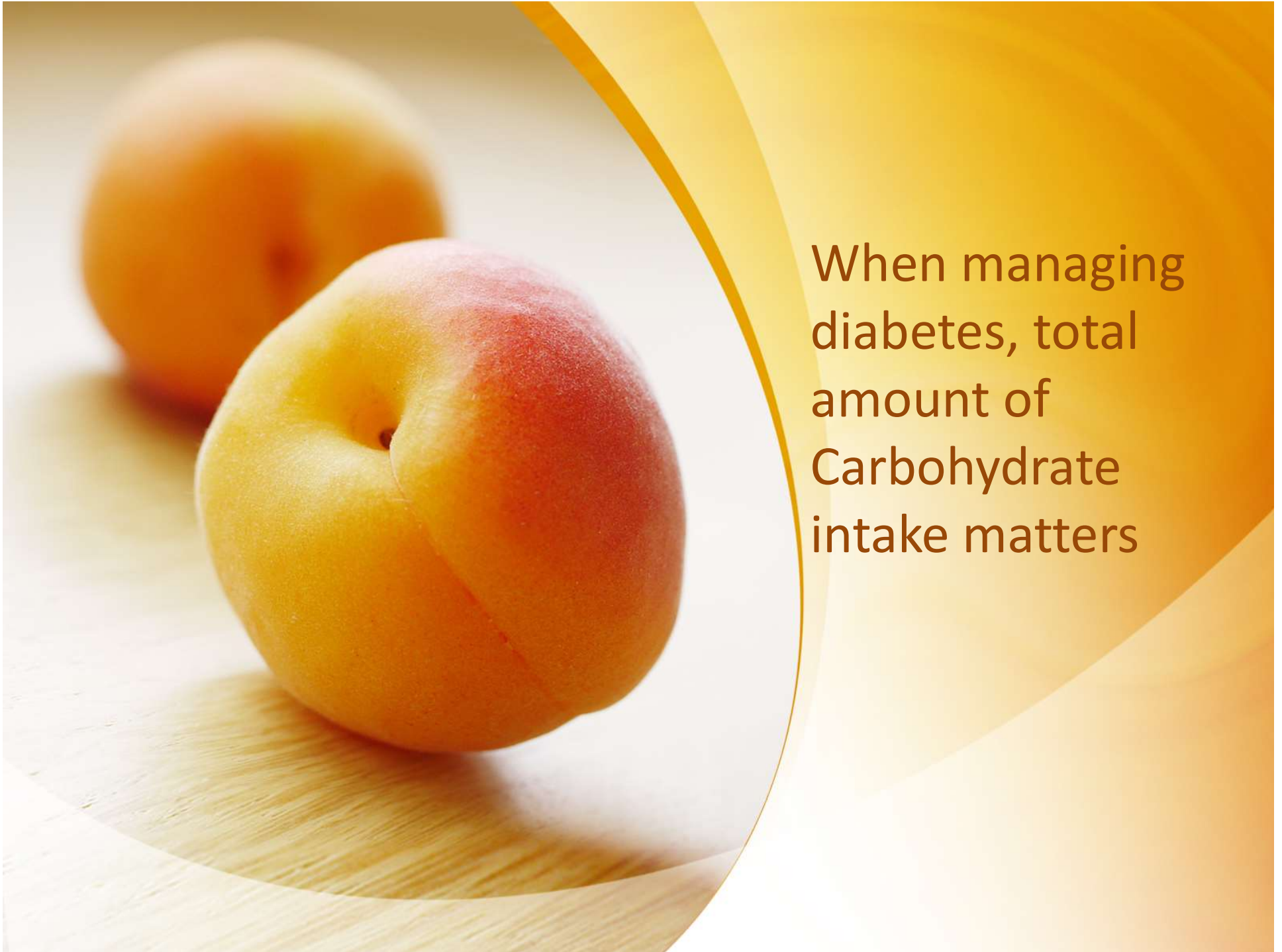
## Watch Your Portion Size



**Dried fruit is denser natural sugar**  
*a raisin is a dried grape*







When managing diabetes, total amount of Carbohydrate intake matters



White Rice and Brown Rice have the exact same amount of carbohydrates

Both have 45 Grams of carbohydrates per cup

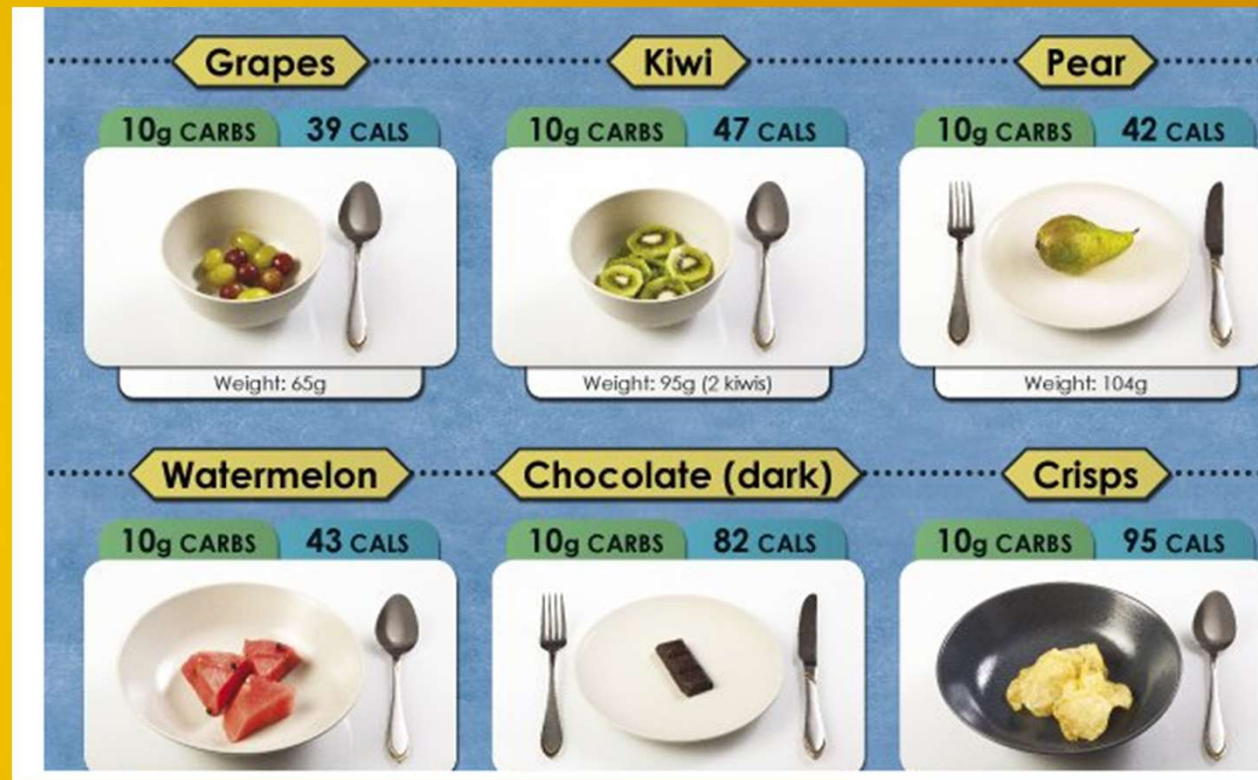
The only difference is Brown Rice has 2 more grams of fiber per cup than White Rice



Choosing healthy food items ensures adequate nutrient intake for optimal health



Carbs may be similar, however, it is important to choose healthy





# Individualized Nutrition Therapy

- It is important to encourage a positive relationship with food and food choices
- To avoid nutritional messages like “foods allowed” and “foods to avoid”, and rather
- Focus on encouraging portion control for both, foods to eat more regularly (healthy food choices) and foods to eat less frequent (i.e. treats)
- Restrictions of certain food choices can be made as guided by scientific evidence.
  - In clinical practice, we often refer to the downloads from patients glucometers and make amendments were needed



## Individualized Nutrition Therapy Long-term Goal

- The goal of healthy eating is to develop an eating pattern that can be maintained for life, not just a few weeks or months, or until you've reached your goal weight.
- We need exercise discipline
  - take control of how much we eat
  - Know when to eat, i.e. eating out of boredom vs. eating when hungry
  - what types of food we choose to eat



# Changing habits

- Changing habits seem challenging at first
- We need to exercise patience
- Research has shown new preference of food can be developed over time .
- Involving family and friends into healthy eating or healthy lifestyle habits helps with extra support
- Dietary changes were needed are made based on the current dietary intake- in addition to the socioeconomic and cultural background

# Elements of Change

- For a successful behavioural change, we need to take note of:
- **Readiness to change**
  - **Available or access to** resources & knowledge contribute to long-term maintenance of healthy eating behaviour
- **Barriers to change**
  - ? Finances
  - ? Time constrains – work commitments
  - ? Lack of cooking skills
- **Expect relapse**
  - Is the individual prepared for how to handle triggers of the previous unhealthy eating habits?
- ☐ It is important to involve family for a lasting and a successful change
  - If the whole family changes to healthy eating practices
  - It will help with less triggers or temptations



# Tips to help you maintain your goal

- Choose products that are locally & easily available
- Food items that fit your budget & lifestyle
- Try something new & different cooking methods
  - the tongue develops new taste & preferences over-time
- Keep a bowl of fresh fruits where you can easily grab; i.e. in the kitchen, dining or living room
- Avoid snacking when you are bored, frustrated, stressed or watching TV
  - These may lead to mindless over-eating & weight gain
- Keep your body well hydrated by carrying water bottle with
  - The signal of thirst can be easily confused with hunger
- Learn how much food you eat & track your daily activity level
  - Make use of apps i.e. Myfitnesspal, fatsecret



## Record Keeping

- Keeping records improves accountability and awareness of the food intake and activity level
- Helps to recognise:
  - What affects readings/ glucose control
  - areas of improvement,
  - triggers for unhealthy eating, and extra calories that may be consumed mindlessly
- Recording of food intake should be done just before or immediately after the intake for better accountability.
  - Underestimation of food intake or total energy consumed may result with late recording, as it is easy to forget to note down smaller items consumed in between meals.



## Conclusion

- The food & drinks we consume should be better perceived as for nourishment rather than for comfort, or keeping busy
- Let us develop a positive relationship with food so we can manage the conditions we live with better
- Less diversion from the current individual dietary pattern may be more ideal to promote and sustain healthy food choices & eating behaviour
- Nutrition & regular physical activity are important components when managing diabetes
- What we choose to eat & how much we eat, are all important in keeping blood glucose and weight under control



# Thank you!!!

- **Some of websites that can be used for new or different recipes** to keep meals interesting, healthy and tasty
  - <https://www.spar.co.za/Recipes>
  - <http://www.picknpay.co.za/recipes>
  - <http://cookingfromtheheart.co.za/cfth-recipes/>
  - <https://www.checkers.co.za/recipes.html>
  - <https://www.woolworths.com.au/Shop/Recipes>
  - <http://www.foodandthefabulous.com/tag/masterchef-sa/>