



Summary Statement on Low Carbohydrate Diets for Health and Weight Loss by Association for Dietetics in South Africa and Nutrition Society of South Africa

Any diet recommended for the short or long term should be nutritionally sound, not harmful to health or the environment, practical, affordable, and suit one's taste and cultural preferences. Current best available scientific evidence does not support an extreme low carbohydrate diet for reducing the risk of disease. Low carbohydrate diets may enable some people to lose weight by reducing their total energy intake (measured in kilojoules or calories) and achieving an energy deficit. However, achieving a nutritionally adequate and healthy dietary pattern becomes problematic with extreme low carbohydrate diets that emphasise high fat intake from predominantly animal foods and restrict and eliminate many healthy nutrient- and fibre-rich foods.

This Summary Statement presents explanations of key concepts and an overview of recent scientific evidence on low carbohydrate diets for health and weight loss.

When is a diet low in carbohydrates?

- Carbohydrate, fat and protein (also termed macronutrients) provide the body with 100% of the food energy (kilojoules or calories) we need. So, the sum of the amount of carbohydrate, fat and protein we eat every day is equal to our total daily energy intake.
- It is currently recommended that carbohydrates should make up between 45 to 65% of total energy intake,¹⁻⁴ and diets with less than 45% of energy from carbohydrates are considered low in carbohydrates, as they fall below this recommendation.
- There is no universally accepted definition for low carbohydrate diets and popular low carbohydrate diets generally cover a spectrum from extreme restriction (where carbohydrates should be restricted to less than 5% of total energy), to a more moderate restriction, such as 30%. An extreme restriction generally means limiting carbohydrate intake to no more than 25 g per day, i.e. only consuming one medium-sized apple (about 180 g) along with meats, fish and pure fats per day. Any further intake of fruit, vegetables, dairy, nuts, legumes, or grains, would exceed this 25 g per day carbohydrate allowance. The concern is that eliminating such a variety of important foods can lead to an unbalanced and restrictive diet, that is very hard to maintain and can increase risk of disease.

Dietary recommendations for health

- Dietary guidelines are up-to-date recommendations on how generally healthy populations should eat to prevent diseases like diabetes, heart disease and strokes, while also ensuring adequate nutrients for health. These guidelines are created by governments in consultation with experts, after carefully reviewing all the latest scientific evidence and also considering the quality of the evidence.
- Dietary guidelines have started moving away from the historical focus on single nutrients, to a focus on dietary patterns – the amounts and combinations of different foods, drinks, and nutrients (when available) in diets, and how frequently these are habitually consumed.
- Certain dietary patterns are consistently associated with health and reduced risk of obesity and chronic diseases, particularly heart disease and strokes, hypertension, type 2 diabetes and certain cancers⁵⁻⁸. The preferred dietary patterns that are being recommended (internationally and in South Africa) vary in the amounts of carbohydrate, fat and protein, but

are consistent in what they have identified as healthy dietary patterns in terms of the foods that are recommended, which includes a variety of whole grains, fruit, vegetables, nuts, legumes, healthy oils, proteins such as lean meat and seafood, and reduced intake of red and processed meats, salt and sugar-sweetened beverages.

Here are a few examples of recommendations for healthy dietary patterns from around the globe:

South African Food-based Dietary Guidelines, 2012 ⁹: “The food-based dietary guideline ‘Enjoy a variety of foods’ aims to encourage people to consume mixed meals, to increase variety by eating different foods from various food groups, and to alter food preparation methods. A healthy diet contains sufficient water, energy, macronutrients and micronutrient to meet requirements.”

United States of America’s 2015 Dietary Guidelines Advisory Committee (DGAC) ¹⁰: “The overall body of evidence examined by the 2015 DGAC identifies that a healthy dietary pattern is higher in vegetables, fruits, whole grains, low- or non-fat dairy, seafood, legumes, and nuts; moderate in alcohol (among adults); lower in red and processed meats; and low in sugar-sweetened foods and drinks and refined grains.”

Brazilian Dietary Guidelines 2014 ¹¹: “Natural or minimally processed foods, in great variety, mainly of plant origin, are the basis for diets that are nutritious, delicious, appropriate, and supportive of socially and environmentally sustainable food systems.”

Australian Dietary Guidelines 2013 ¹²: “A variety of foods should be consumed from each of the five food groups – vegetables and legumes/beans; fruit; grain (cereal) foods mostly wholegrain and/or high cereal fibre varieties; lean meats and poultry, fish, eggs, nuts and seeds, and/or legumes/beans; and milk, yoghurt, cheese and/or alternatives. Mostly reduced fat milk, yoghurt and cheese products are recommended for adults. Limit intake of foods containing saturated fat, added salt, added sugars and alcohol.”

Nordic Nutrition Recommendations (NNR) 2012 ⁴: “Typical features of a healthy dietary pattern as described in NNR 2012 include plenty of vegetables, fruit and berries, pulses, regular intake of fish, vegetable oils, whole grains, low-fat alternatives of dairy and meat, and limited intake of red and processed meat, sugar, salt and alcohol.”

- What these dietary patterns highlight is that the quality of foods chosen is important. Different types of fat and carbohydrate found in foods have different effects on health. Reducing saturated fats (found mainly in animal sources, coconut oil and palm oil) and *trans* fat (processed fats) and replacing them with unsaturated fats (plant oils) reduces the risk of heart disease ¹³⁻¹⁷. Removing saturated fat and replacing it with refined carbohydrates may be harmful ¹⁸. The type or quality of carbohydrates is important, and carbohydrates should be eaten as unrefined grains and cereals, beans, lentils, peas, fruit and root vegetables rather than as refined carbohydrates and added sugars ^{19, 20}.
- Low carbohydrate dietary patterns, especially the extreme form, are not aligned with these healthy dietary patterns that have been consistently linked with a reduced risk of disease. There is a lack of conclusive evidence regarding the health effects of low carbohydrate diets over the long term, and diets that emphasise an increased intake of animal (saturated) fat may present a real risk for heart disease, especially in at-risk individuals ^{13-16, 21-23}. There is also concern that when foods rich in carbohydrates such as grains, cereals and legumes are avoided and other carbohydrate sources such as dairy, fruits and vegetables are restricted, the diet can become deficient in certain essential nutrients, such as vitamin C, B1, B3, B6, folate, magnesium and fibre ^{24, 25}. This potential for nutrient deficiencies is a serious concern for the vulnerable stage of infancy and young childhood, as such deficiencies could compromise growth, and cognitive and physical development ^{26, 27}. Very low carbohydrate ketogenic diets may be appropriate for management of some medical conditions (such as epilepsy), but only under close medical supervision and monitoring by a suitably trained and legally registered healthcare professional.
- Aside from the health implications, a diet low in carbohydrates and high in fat and/or animal protein is likely to be more costly. Adopting costlier diets will not be affordable or practical for most South Africans, worsening food security, especially in resource-scarce settings. Diets rich in animal products also pose a significant threat to environmental sustainability ^{28, 29}.

Dietary recommendations for weight loss

- An imbalance between the energy taken in from food and the energy used by the body can lead to changes in weight, which means a sustained energy deficit (negative energy balance) can lead to weight loss ³⁰.
- Different weight loss approaches work for different people as long as they are able to reduce their energy intake ³¹. Low carbohydrate diets have **not** been found to be more effective for weight loss than balanced diets, confirming that any diet achieving a reduction in energy intake results in weight loss, regardless of the proportion of carbohydrate, fat or protein, although some dietary patterns may be more beneficial than others for promoting long-term health ³⁰⁻³⁴.
- Low carbohydrate diets may enable some people to lose weight by reducing their energy intake and achieving an energy deficit. When people reduce carbohydrates, they tend to reduce total energy intake by eating less food. Also, the associated higher protein and fat intake may decrease hunger in some people also leading to reduced total energy intake ³⁵⁻³⁸.
- Dietary patterns that are relatively low in total fat and moderate in carbohydrate lead to small but clinically meaningful and sustained weight loss ³⁹. Reducing free sugar intake (a form of carbohydrates), especially from sugar-sweetened beverages, plays an important part in weight loss ⁴⁰.
- The fundamental issue is not so much losing weight, but maintaining the weight loss. Adherence to a reduced energy intake is key for successful weight loss ³⁰. Therefore, once weight is lost, it is important for people to adopt eating habits that make maintaining weight loss easy and that are linked to better health over the long term.

Public health messages and individual nutrition advice: Is there a difference?

When considering nutrition guidelines and dietary advice, it is very important to differentiate between public health messages and those that are tailored to meet the specific needs of individual members of the public. Public health messages are intended for the general public, and can be communicated as “blanket” evidence-based messages based on proven public health problems in a population, and based on the profile of the majority of the population. Tailored messages to individual members of the public should only be provided following a one-on-one consultation with a qualified healthcare worker, based on scientific reasoning and individual medical and contextual motivations for individualisation, and these may in some cases deviate from the “blanket” public health message, if needed and appropriate.

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