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How can technology help us simplify carbohydrate counting?

At first, it may seem somewhat cumbersome[1], requiring time, dedication, and training. However, after repeating the verification process multiple times, it becomes increasingly easier. It is necessary, from time to time, to refresh our knowledge, as we often "unlearn" what we have acquired or develop certain habits.

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Fortunately, due to technology, the process of recognizing, weighing, adjusting, and verifying has been simplified, and today we have tools that make it easier.

In recent years, the emergence of new technologies has enabled people with diabetes to be more efficient in identifying and counting carbohydrates—an essential aspect for maintaining glucose levels within range and achieving good disease control. Additionally, some of these tools can support, complement, and personalize the work of healthcare professionals responsible for managing this condition, such as dietitians, nurses, endocrinologists, etc.1

So, what options are available today?

1. Mobile Applications

These provide immediate access to extensive and specific information about the nutritional content of different foods or meals. They can be categorized into three types:

a) Barcode scanning apps: e.g.,

MyRealFood, Yuka, El CoCo. By scanning food labels, these apps provide multiple details about products found in stores, such as total carbohydrate content, presence of simple sugars, level of processing, and health impact. This helps users make better choices when shopping and compare similar products.

b) Image analysis apps:

e.g., Bitesnap, Calorie Mama, Foodvisor. Using artificial intelligence (AI), these apps quickly identify ingredients in a meal and automatically calculate its nutritional composition (carbohydrates, proteins, fats, etc.). This is particularly useful when eating out and needing a quick estimate of the most appropriate portion size. However, it's crucial to use reliable sources backed by scientific evidence2.

c) Food database apps:

e.g., MyFitnessPal, FatSecret, Carb Manager. These serve as constantly updated nutritional information banks, helping simplify carbohydrate counting and reduce errors3.

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2. Online Calculators

Examples include Hospital Sant Joan de Déu or Diabetes a la Carta. These web-based tools allow users to precisely calculate the number of carbohydrate servings in a given food portion or determine how much of a food to consume to reach a specific carbohydrate target.

These tools are particularly useful for foods containing sugar alcohols—e.g., maltitol, xylitol, sorbitol—which are partially metabolized into glucose.

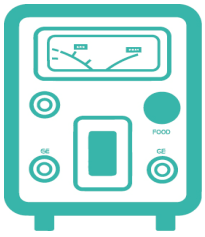
Some calculators also allow manual data storage, making it easier for users who frequently eat the same foods.

3. Smart Devices

Currently, some kitchen scales, such as Aurora Nutrio, have started incorporating automatic food recognition technology, providing not only weight but also a breakdown of nutritional content, including carbohydrates.

Additionally, visual scanners like TellSpec use spectrometry and bioinformatics to analyze food composition by reading the light wavelengths reflected by the item and generate some sort of "bar code" showing its molecular composition.

This is especially beneficial for fresh foods—fruits, vegetables—that lack nutritional labels.



4. Voice Assistants

Virtual assistants such as Alexa, Google Assistant, and Siri can also simplify carbohydrate counting through voice commands, thus reducing the time spent manually searching for nutritional information. D

CONCLUSIONS

The continuous advancement of technology is making carbohydrate counting more accessible, simpler, faster, and more precise, reducing manual effort.

Therefore, mobile apps, online calculators, smart devices, and voice assistants not only help people with diabetes better manage their condition but also serve as effective support tools for healthcare professionals. For instance, combining carbohydrate counting with continuous glucose monitoring systems allows for data-driven decision-making, helping individuals recognize patterns and understand how different foods impact blood sugar levels over time4.

In conclusion, as emerging technologies (e.g., wearables, biosensors) continue to evolve, new innovations in carbohydrate counting will likely emerge, better adapting to individual needs.

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