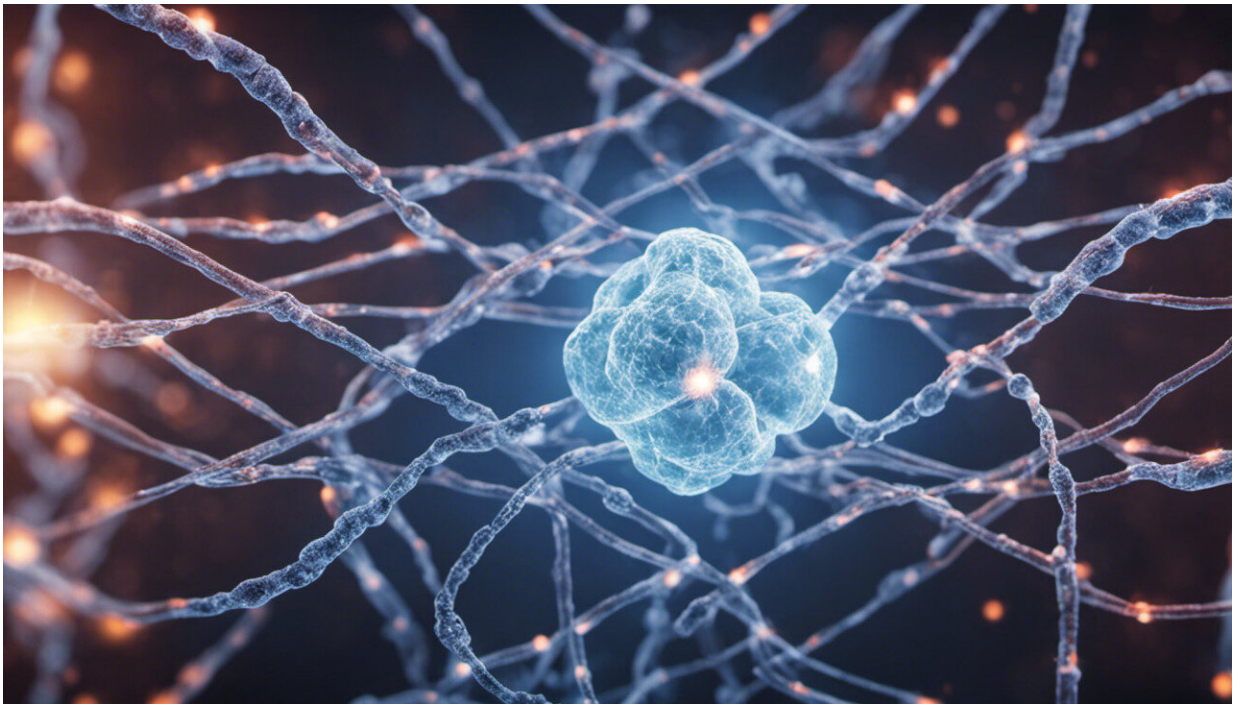


AI could democratize nutritional advice, but safety and accuracy must come first

June 26 2023, by Danielle McCarthy



Credit: AI-generated image ([disclaimer](#))

When you search online to see how people are using artificial intelligence (AI) tools [such as ChatGPT](#), you will quickly find that food requests are popular. More specifically, users are seeking help with menu planning to meet their personal dietary goals.

But how effective is this technology in providing dietary advice? In a consumer poll, over [three out of five consumers](#) agreed they would like to eat a healthier diet. Some 73% felt it was important to buy food that has a low environmental impact.

A substandard diet is a [leading cause of chronic disease and death](#) around the world. Additionally, a third of all human-caused greenhouse gas emissions are linked to food. Against this background, it's clear that help is required to achieve the transformational shift from goals to behavior.

However, for the [19.9% of Europeans](#) who live with a self-reported food allergy, every eating decision has to align with protecting themselves from an adverse reaction. This comes at a cost: [the average spend on weekly food purchases](#) for those with food hyper-sensitivities is 12%–27% higher than for those with no allergies. An extra 40.37 days is required for those with allergies to research and plan their diet.

So, while AI could help many households have healthier diets, the consequences of an error for those with food allergies can be life threatening. With concern also raised for consuming purported healthy [ingredients such as coconut oil](#), it is extremely important that nutrition experts help inform these technological solutions.

How can AI help?

Academics in Canada [used specific types of AI](#), known as [natural language](#) processing (NLP) and machine learning, to process text on food labels. This is done to accurately categorize food products by their specific nutritional criteria.

Such criteria include the Table of Reference Amounts for food categorization used by Health Canada—the country's government

department for [health policy](#)—along with the nutrient profiling system of Food Standards Australia New Zealand, the authority that develops food standards for both Oceanian countries. This work showed that technology could be used to reduce the time needed to manually categorize large numbers of food products.

Commercial offerings using technology in this way already exist. One example is the company [Food Maestro](#). The company I am involved with, [Spoon Guru](#), has been working with global retailers for eight years, helping them facilitate the food search and find features within online grocery shopping platforms using AI systems that are co-developed with registered nutritionists.

The field of generative AI uses large language models (LLM) and machine learning to not only identify words within text but also to understand their order and context to produce human-like responses to text-based prompts.

AI chatbots such as Chat GPT use this technology to synthesize information, summarize text and [answer questions](#). It can be used to provide tailored menu plans, generate recipe ideas and compile shopping lists.

Chatbot test

Early expert reviews using Chat GPT for menu planning and dietary advice have produced mixed results. [A study](#) to assess the chatbot's ability to produce dietary plans for those with allergies found that out of 56 diets, it generated an unsafe plan on one occasion, including almond milk within a nut-free dietary plan.

There were other errors too. For example, there were mistakes in the way food quantities and energy values were described and there was

repetition of the same foods within menu plans.

[In a review](#) of ChatGPT's potential for personalized obesity treatment, the authors raised concerns about patient privacy and security. They also noted a lack of accountability should harmful advice be provided. These models currently do not have to abide by professional standards or codes of ethics.

[Dietitians tested ChatGPT's ability](#) to define an ideal diet for those with type 2 diabetes or those undergoing haemodialysis—a treatment for kidney failure. They too found errors. The chatbot responded with foods that would not be optimal for these conditions, without any warnings. Menu plans were again repetitive and the authors raised concerns that such solutions could encourage users not to consult qualified health professionals.

The lack of references to the sources of information used to generate the answers meant they couldn't check if they were of high scientific quality. [A cardiologist](#) tested the advice that ChatGPT generated in relation to his specialist area, which was the link between dietary fat and cardiovascular disease. He felt the answers misinterpreted the research studies, repeatedly producing errors and inconsistencies in a tone described as sensible, confident and convincing.

Ethical implications

Despite clear signs that caution is warranted, some early reviews also noted that AI had strengths and the potential for providing personalized nutrition advice. ChatGPT's responses often aligned with published food-based dietary guidelines. For example, the chatbot included fruit and vegetables in every meal, and incorporated advisory statements, such as "it is important to read labels carefully" and "consult a health professional."

The [ethical implications](#), safety and quality of the technology will need to be more fully understood before it is likely to be used within these professions. However, customers and patients may choose to make regular use of it regardless.

Technology like ChatGPT could be seen as a useful tool for dietitians and registered nutritionists to quickly find information about foods, helping inform their work.

Academics investigating the relationship between food and health could also use AI to [save time or develop innovative approaches](#) to their research. This could help increase the impact of their research, increasing its accessibility in a way that benefits society.

Policy makers, regulators and those working in the food industry are very interested in the health and sustainability of food. They are also interested in how advice in this area is communicated to the public.

Tools such as ChatGPT represent a whole new dimension of information and misinformation about food and health. The response to it will be crucial for ensuring the accurate, safe and transparent communication of dietary advice.

Using the technology could greatly increase access to personalized dietary advice for the general public. It could also help address the barriers individuals face in achieving their health goals.

However safety must come first. Nutrition experts, traceable sources of scientifically robust information and quality assurance processes need to be central to the development and implementation of such technologies when using them to provide dietary advice.

This article is republished from [The Conversation](#) under a Creative

Commons license. Read the [original article](#).

Provided by The Conversation

Citation: AI could democratize nutritional advice, but safety and accuracy must come first (2023, June 26) retrieved 27 April 2024 from <https://medicalxpress.com/news/2023-06-ai-democratize-nutritional-advice-safety.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.