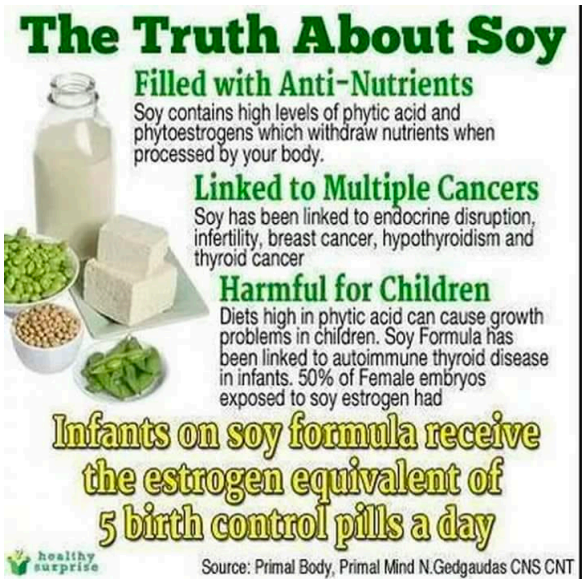
Nutrition Research: A Methodological Nightmare

For decades, Dr. Oz has been the face of accessible nutrition. A daytime television superstar, *The Dr. Oz Show,* was on air from 2009 to 2022. In this program, he provided the latest in heath and nutrition "research" and answered viewers questions. In addition to his own show, he has been a guest on over 60 episodes of *The Oprah Winfrey Show*. He has won multiple Emmys, been on the *New York Times* Bestseller List, and was named Forbes' most influential celebrity. According to the biography on his website, He has authored over 400 original publications, book chapters, and medical books, has received numerous patents, and still performs heart surgery. Even with an upcoming senate run in 2022, his website still regularly publishes recipes, nutrition advice, and an assortment of wellness tips. [1]

Dr. Oz is known for easy-to-understand, friendly, no-nonsense health advice. Among the accolades and public revere however, Dr. Oz is also known for oversimplified medical advice and misleading claims. In 2014, a group of collaborators for *The British Medical Journal* took a random sample of episodes from *The Dr. Oz Show* and sought to find evidence to back up each of the health claims he made in those episodes. They found that only 46% of those claims could be backed up with any sort of evidence. They indicate that potential conflicts of interest and an audience desire for broad "quick fix" style advice may be why scientific rigor is not prioritized. [5]

This whirlwind of conflicting information and "quick fix" nutrition advice will feel familiar to anyone that scrolls social media, watches daytime TV, or googles "health benefits of [insert food of your choice here]. " On social media sites like Facebook, meme-style photo posts like the ones below circulate with little to no fact checking. A healthy diet often feels unattainable when foods like butter, soy, eggs, and everything in between are constantly vacillating between superfood and potential carcinogen.



This image was shared over a thousand times on Facebook with little to no evidence to support its claims.

The reality of nutrition science doesn't make for flashy headlines or best selling diet books.

Nutrition is complicated, hard to research, and highly individualized. Given the human nature of what and how we eat, it's challenging to run a study that is ethical, affordable and accurate, creating a conflict between reliable information and marketable advice. From animal studies, to surveys, to highly controlled lab studies, researchers are tasked with the task of balancing ethics, affordability, and effectiveness. [6] It is not often that this reality is represented on outlets like *The Dr. Oz Show.*

According to Harvard's T.H. Chan School of Public Health,

> "The research process is like placing stones on an old-fashioned balance scale. When enough weight accumulates on one side, the scale tips in favor of a particular recommendation. And the more weight there is on one side, the stronger the recommendation is and the more evidence it would take to change it." [6]

According to a study by Mayo Clinic, memory based studies are almost completely unreliable. The study aims to prove the average person's memory is not reliable enough to be meaningful in a research setting. They also argue that the conditions of a research setting also have the ability to blur or create unreliable memories in their participants. Yet, the study identifies that this practice was still widely used by nutrition researchers despite the evidence that it was ineffective.

Because they are affordable and can produce results in a short period of time, case control studies are popular among nutrition researchers. In these studies, researchers ask participants to share information about their past health behaviors and conditions. These studies rely heavily on the participant's memory and can't produce definitive results. A more reliable study would be a cohort study. In these studies, researchers watch participants behavior over a long period of time. However, these studies are expensive to conduct and there is still a degree to which it relies on self reporting. It is also impossible to account for all of the behaviors and preexisting conditions a participant might have. The more control researchers have over a study, the more reliable it will be, though this can lead to significant ethical conflicts. [7]

Animal or human cell studies happen when researchers test a hypothesis on animals like mice or on human cells in a Petri dish. These studies can be useful in identifying nutrition research that might be worth pursuing in the future, but human behavior cannot accurately be measured without consulting living human beings.[7]

In addition to the challenges of nutrition methodology and the human memory, nutrition research is almost always muddled by what researchers refer to as confounding features. These are features that correlate and mix, thus making a cause-and-effect relationship which can be difficult to measure. For example, a 2018 study published in *The Lancet* found that people who drink no alcohol at all compared to heavy, moderate, and light drinkers had much better health outcomes. We could interpret that as proof that alcohol is "toxic" and will invariably shorten your lifespan. Or we could ask ourselves about the confounding factors: people who cut out alcohol all together could be more disciplined in their health choices overall. Perhaps non-drinkers are more likely to avoid other dangerous behaviors like smoking or texting while driving?

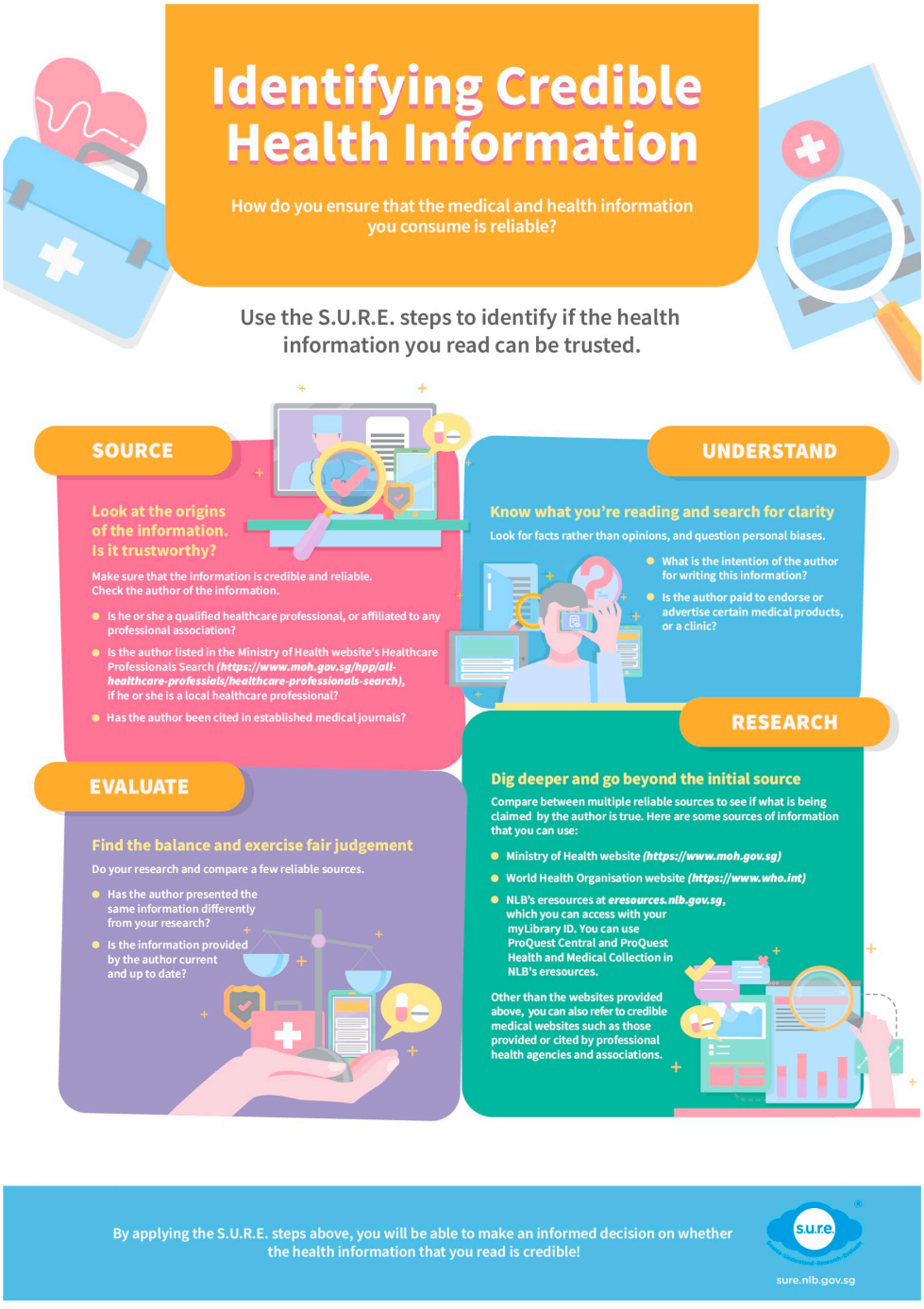
How can you even begin to make healthy choices?

None of this is to say that science cannot be trusted. Or that nutrition advice is never valuable. There is a very large gap between refusing to get a vaccine because you "don't trust researchers" and not switching to margarine because you know that the research is contradictory and not reliable enough to make that kind of sacrifice. Ultimately research is a conversation. It is an exchange of ideas with varying degrees of evidence. Just like the conversations we all have in our everyday life, these critical conversations sometimes are grounded enough to represent fact. And sometimes they are more theoretical and focused on exchanging ideas and bringing potential benefits and dangers up for more research.

As profitable and satisfying as it may be, any media outlet, influencer, or educator has a responsibility to avoid broad sweeping claims . Given the existence of a $72.6 billion diet industry [8], those changes are not going to be made overnight. As long as people like Dr. Oz and the industry he represents are profiting off of over generalized health claims, change will take a lot of effort and education. Until then, the best thing consumers can do is read critically.

If taking diet advice is going to drastically change your lifestyle or feels contradictory to the general advice for a healthy diet, it is worth some extra research on your part. The

Nutrition Source from Harvard's School of Public Health has well researched information on almost any heath topic you can think of. The National Library of Singapore created the infographic below with helpful tips on identifying credible health information. Beyond internet research, you have highly individualized needs and the health advice you follow should match. Talk to your healthcare provider or a registered dietician to receive nutrition advice that is individualized to your needs.



The S.U.R.E. acronym will help you remember what to look for when searching for reliable health and nutrition information.

Sources

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