WHY NUTRITION SCIENCE IS SO CONFUSING

9 REASONS EATING WELL ISN'T AS STRAIGHTFORWARD AS WE'D LIKE IT TO BE.

1 NUTRITION RESEARCH IS STILL YOUNG

It takes time to master a science. Compared to chemistry, for example, nutrition is in its infancy.

CHEMISTRY

NUTRITION

<1200 BC
Metals are first recorded and manipulated.

430 BC
Greek philosophers propose the idea of the atom.

300 BC
Aristotle wrongly declares the existence of only four elements.

300 BC - 300 AD
Alchemists try to transform lead and other cheap metals into gold.

1520
Alchemists try to make the elixir of life.

1774-1794
Joseph Priestley discovers "dephlogisticated air" (oxygen).

LATE 1700S
Robert Boyle disproves alchemy and Aristotle's four elements.

MID-1800S
Chemistry becomes a science: Discoveries include protons, X-rays, fluorescence, electrons, radioactivity, atomic mass, relative molar mass, and more.

MID-1900S
Molecular biology and biochemistry come into being with discovery of DNA.

1842
Scurvy is successfully treated for the first time.

MID-1800S
Researchers realize that the body oxidizes fat and carbohydrates for energy.

1902
Wilbur Atwater publishes his "Atwater factors" – estimates for the metabolizable energy from carbohydrates, protein and fat in mixed diets.

EARLY 1900S
Vitamin A, B, C, D and E, B5, B6, B3, K, and folate are discovered.

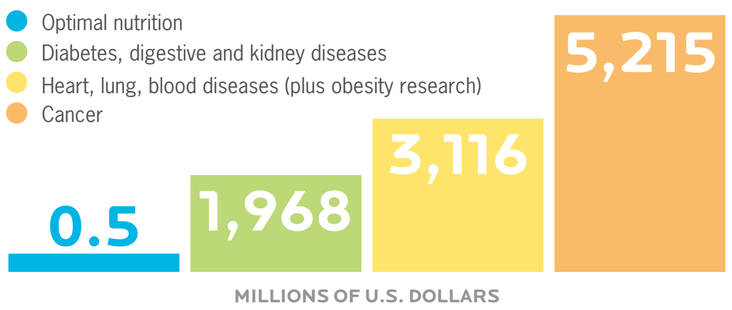
1970S
Researchers discover the link between risk of coronary heart disease death and low HDL cholesterol level.

As you can see, the field of chemistry has been around at least 10X longer than the field of nutrition — and it made almost no progress in its first 200 years. By this comparison, one could say the field of nutrition is in its "alchemy days".

2 MOST FUNDING GOES TO DISEASE TREATMENT, NOT PREVENTIVE NUTRITION

Most researchers would rather ask, "How can we end this epidemic?" than, "How can we get abs?"

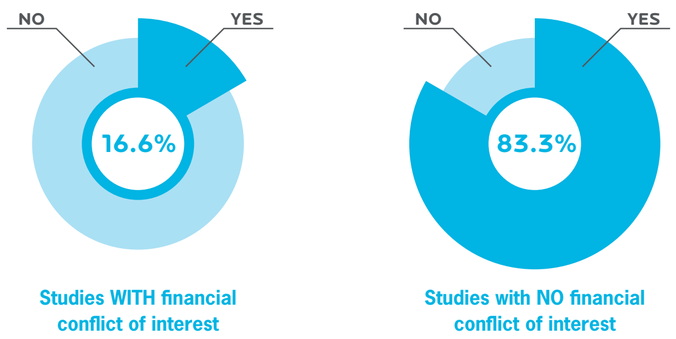
2016 U.S. NATIONAL INSTITUTE OF HEALTH FUNDING BY AREA OF RESEARCH



3 OTHER NUTRITION QUESTIONS ARE OFTEN FUNDED BY INTERESTED PARTIES

Where funding comes from can affect what studies find.

CAN SUGARY DRINKS LEAD TO WEIGHT GAIN?



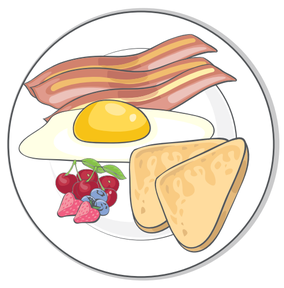
Studies WITH financial conflict of interest

Studies with NO financial conflict of interest

This doesn't mean researchers are cheating. At the same time, corporate pressures can influence study design such that the research is more likely to show what the company wants it to show.

4 CONFOUNDING VARIABLES MAKE IT HARD TO PROVE FOOD'S EFFECTS

Even in the best controlled trial, it's hard to isolate the effects of nutrition from all the other factors that affect your health.

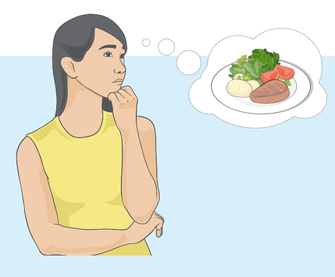


PARTICIPATION IN A STUDY CAN ITSELF BECOME A CONFOUNDING VARIABLE.

For example, when scientists asked subjects who normally eat breakfast to stop, and asked non-breakfast eaters to start — both groups lost weight. It was the dietary change that created weight loss, not breakfast.

5 MOST NUTRITION STUDIES ARE OBSERVATIONAL

Observational studies have subjects fill out questionnaires about their lifestyle and eating habits. This is a problem because:



People are terrible at remembering what or how much they ate. Quick! What did you eat for breakfast two Tuesdays ago? Exactly.

There are a lot of weird (and meaningless) correlations. One research group found that organic food sales are correlated with autism.

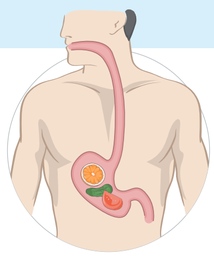
Correlation isn't causation. Does red meat cause heart disease and cancer, or do people with these chronic diseases happen to eat more red meat? Since an observational study can't account for all variables, it can't answer this question.

6 MEASUREMENT TOOLS ALWAYS HAVE LIMITATIONS

For example, even with a straightforward question like, "How do calories affect our weight?" it's hard to get an answer, because:

Calorie counts on food labels and in databases can be off by up to 50%.

We don't absorb all of the energy we consume, and there's no standard for how much energy we absorb, because individuals are unique.

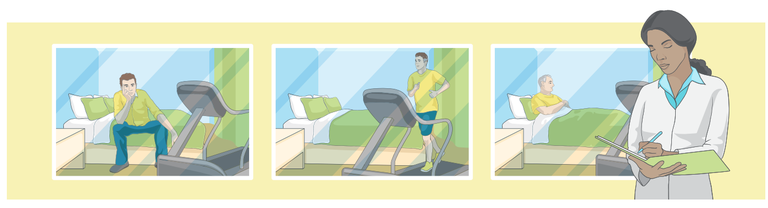


Calorie burn estimates can be off by 3 - 45%.

Your history of dieting and body composition influences how much energy you'll use.

7 WHAT YOU EAT DOESN'T AFFECT YOUR HEALTH RIGHT AWAY

For example, to find out whether red meat causes cancer, you'd need study subjects to live in hermetically sealed metabolic chambers and eat varying amounts of red meat for 30 years. Who's going to sign up for that?



8 YOU CAN NEVER ASSUME A STUDY'S FINDINGS APPLY TO YOU

Even if you could seal people in a metabolic chamber for 30 years, you still couldn't be sure who else those findings would apply to.

FIRST, NUTRITION STUDIES TEND TO USE SUBJECTS WHO DON'T MATCH THE GENERAL POPULATION. THEY'RE OFTEN...

YOUNG AND HEALTHY

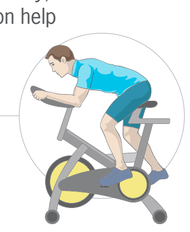
Grad students are popular subjects since they live near academic study labs, have time, and need a paycheck.

MALE

Men are easier to study than women, whose hormonal cycles are hard to control for.

SICK

Subjects suffering from problems like obesity, metabolic syndrome, and/or hypertension help researchers develop treatments.



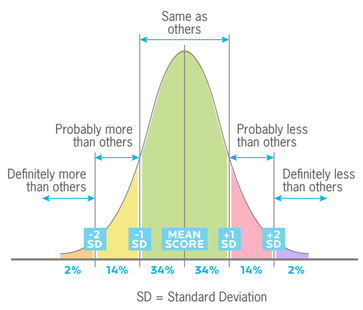
ULTRA FIT

Elite athletes' excellent physical condition minimizes variables and makes hours of exercise in the lab possible.

NON-HUMAN

Animals are captive and have short lifespans, making them convenient and cheap to study.

SECOND, STUDY AVERAGES STILL MAY NOT APPLY TO YOU, BECAUSE...



AVERAGES ARE BELL CURVES. Most people won't match averaged study findings (at least not precisely).

AVERAGES POOL UNLIKE SUBJECTS. For example, a study where subjects metabolize caffeine either quickly or slowly could mistakenly show no effect of caffeine on health when 1/2 the subjects had a positive effect and 1/2 a negative one.

9 IF DOING THE RESEARCH IS DIFFICULT, REPORTING ON IT IS EVEN TOUGHER

Journalists aren't usually trained research scientists. Which means they often:

- misunderstand study conclusions.
- over-exaggerate single study findings.
- don't see how single studies fit into the big picture.

Individual studies are interesting but not often important. They usually provide only one tiny piece of a gigantic puzzle that may take thousands of years to complete.

For the full article explaining this infographic:
https://www.precisionnutrition.com/nutrition-science-is-so-confusing

PrecisionNutrition