

# TRANSLATING COMPLICATED SCIENCE INTO SOMETHING CONSUMERS WILL UNDERSTAND!

Every day, health professionals are expected to translate complicated science into advice their clients can easily understand and act upon. But have you ever considered that what you say may not actually be what your client hears? This handout reveals how patients/clients may misinterpret some of the scientific jargon that's used by health professionals<sup>1a</sup> – and provide solutions to help you avoid those unintentional language barriers...



SCIENTIFIC TERM	WHAT IT MEANS TO HEALTH PROFESSIONALS	WHAT IT MEANS TO THE PUBLIC	USE THIS INSTEAD...
<b>ABSTRACT</b>	A summary of the main aspects of a piece of research in a set format that covers the purpose of the study, the design, the key findings, a brief interpretation of the findings and a conclusion <sup>1b</sup>	Something that's vague, hazy or unclear	A summary or brief outline of the research from start to finish
<b>ANOMALY</b>	Any finding that deviates from, or is inconsistent with, what's expected or is considered to be peculiar in some way <sup>2</sup>	Something that's abnormal or wrong	An irregular research finding that wasn't expected
<b>BASELINE</b>	A control measurement, or set of measurements, carried out before an experiment begins that are used for comparison over time <sup>3</sup>	The starting point	The measurements taken before an experiment starts. These are compared with the measurements taken at the end of the experiment to identify any differences

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<b>BIAS</b>	A loss of balance and accuracy in the use of research methods that may lead to incorrect conclusions. Biases may be caused by a flaw in the study design or how data is collected or interpreted <sup>4,5</sup>	Prejudice, unfairness or favouritism	Something that influences the study and its findings, making the results less reliable or certain
<b>CASE STUDY</b>	The collection and presentation of detailed information about a particular person, group or event <sup>6</sup>	Someone who takes part in a study	An in-depth study of a person, group or event that's carried out to explore a specific area
<b>CONTROL/CONTROL GROUP</b>	A group in a study that receive no treatment, a different treatment or a placebo (see below). Sometimes called a comparison group as this group is compared with the group that does receive the treatment (the experimental group) <sup>7</sup>	Person in authority or in charge, or who takes control	A comparison group that has no treatment, a different treatment or a treatment that has no effect
<b>CONTROLLED STUDY, TRIAL OR EXPERIMENT</b>	A study, trial or experiment that includes a comparison or control group, and an experimental group <sup>8</sup>	A study that is controlled by someone	A study that includes two groups: a control or comparison group (see above); and a treatment group. The two groups are compared to see if the treatment has any effect
<b>DATA</b>	Factual information collected in a study, usually based on statistical measurements. The data is usually used to make conclusions	Numbers or how much data has been used or is left on a smartphone	Facts and figures that can be used to interpret the findings and come to conclusions
<b>ERROR</b>	The difference between the results in a study and the expected or theoretical results. A margin of error of up to 10% is usually acceptable <sup>9</sup>	The information is a mistake, wrong or incorrect	The difference from the exact or true number
<b>EXPERIMENT</b>	A procedure done in a controlled environment to gather observations, data or facts, to demonstrate known facts or theories, or to test hypotheses or theories <sup>10</sup>	A laboratory test involving animals like mice and rats	A controlled test

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<b>HYPOTHESIS</b>	A tentative proposal or explanation made to explain certain facts, theories or observations that require further investigation to be verified <sup>11</sup>	A theory, hunch or educated guess	A proposed explanation or prediction for something that can be tested
<b>META-ANALYSIS</b>	An analysis that combines the results of different studies done on the same subject. The results of a meta-analysis are usually stronger than the results of any single study <sup>12</sup>	Something that's analysed. Meta is also a gaming term (Most Effective Tactic Available)	One big study that compiles the findings of lots of other studies on the same subject and comes to a conclusion
<b>MODEL</b>	A representation of an idea, object, process or system that's used to describe, explain and predict things that can't be seen or experienced directly <sup>13,14</sup> The term is used differently by scientists in different fields e.g. a mathematical model is different to a climate model	Fashion model or toys such as model cars	An educated guess, explanation or prediction on how something will behave or act e.g. scientists use models to predict climate change. Scientific models are estimations and not fact
<b>NEGATIVE TREND</b>	A trend where something is developing or changing in a downwards direction	A bad trend	A downwards trend. Negative trends aren't always bad e.g. there has been a negative trend in deaths from heart disease over the years
<b>PEER-REVIEWED</b>	The process where research is evaluated critically for quality and accuracy by experts in the same field, usually prior to publication	Looked at by your friends	A process that helps to ensure research is good quality and accurate
<b>PLACEBO</b>	A substance with no benefit that looks the same and is taken in the same way as the active substance being tested. The effects of the active substance are compared with the placebo	Something that's fake	A substance that has no physical effect

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<b>POPULATION</b>	The target group under investigation	Everyone living in the country	The group of people included in the research
<b>POSITIVE TREND</b>	A trend where something is developing or changing in an upwards direction	A good trend	An upward trend. Positive trends aren't always good e.g. there has been a positive trend in childhood obesity over the years
<b>ROBUST</b>	A term usually used in relation to statistics that refers to the strength of a statistical model, test or procedure according to the criteria set out. Robust statistics aren't affected by outliers or small departures from what is expected <sup>15</sup>	Strong and tough	Robust statistics are resistant to any errors caused by outliers (extreme data)
<b>SAMPLE</b>	The population researched in a particular study. Generally, the sample should be representative of the population so that findings can be generalised to the whole population. The more people in the sample, the more reliable the results usually are	A urine sample	The group of people in the study
<b>SIGNIFICANT</b>	The probability that the difference between the outcomes of the control and experimental group are resulting from something other than chance	Meaningful, important	A result that is unlikely to be due to chance
<b>THEORY</b>	A general opinion, expectation or speculation about a specific behaviour or set of events usually based on other findings but still needs to be proven. A theory is not as specific as a hypothesis	An assumption or idea in someone's head or the theory test when learning to drive	An idea that's based on some insight but has not yet been proven
<b>UNCERTAINTY</b>	Scientific uncertainty is a quantitative measurement of variability in the data <sup>16</sup>	Not sure, ambiguous, indecisive or can't make up your mind	A range of possible values within which, the true value sits

# HOW TO DECODE SCIENTIFIC JARGON AND MAKE IT SIMPLER

The following looks at the abstract for a piece of research and translates it into simple terms.

## **The effects of almond consumption on fasting blood lipid levels: a systematic review and meta-analysis of randomised controlled trials<sup>17</sup>**

Abstract: A systematic review and meta-analysis of randomised controlled trials was undertaken to determine the effects of almond consumption on blood lipid levels, namely total cholesterol (TC), LDL-cholesterol (LDL-C), HDL-cholesterol (HDL-C), TAG and the ratios of TC:HDL-C and LDL-C:HDL-C. Following a comprehensive search of the scientific literature, a total of eighteen relevant publications and twenty-seven almond-control datasets were identified. Across the studies, the mean differences in the effect for each blood lipid parameter (i.e. the control-adjusted values) were pooled in a meta-analysis using a random-effects model. It was determined that TC, LDL-C and TAG were significantly reduced by  $-0.153$  mmol/l ( $P < 0.001$ ),  $-0.124$  mmol/l ( $P = 0.001$ ) and  $-0.067$  mmol/l ( $P = 0.042$ ), respectively, and that HDL-C was not affected ( $-0.017$  mmol/l;  $P = 0.207$ ). These results are aligned with data from prospective observational studies and a recent large-scale intervention study in which it was demonstrated that the consumption of nuts reduces the risk of heart disease. The consumption of nuts as part of a healthy diet should be encouraged to help in the maintenance of healthy blood lipid levels and to reduce the risk of heart disease.

### **WHAT THE STUDY SET OUT TO DO?**

To look at the effect eating almonds had on the amount of cholesterol and triglycerides in the blood of a large number of people. This included looking at the total amount and different types of cholesterol – HDL (good) and LDL (bad) – as well as the proportions they were found in the blood.

### **HOW THE STUDY WAS CONDUCTED?**

Researchers used a search engine that specialises in finding scientific studies to look at all the research that had been published on almonds and blood fat levels in humans. The scientists found 27 relevant studies. They combined all the results from these studies to create one set of figures looking at the effect eating almonds had on blood fat levels. They then analysed the figures to see whether the effects were due to chance or more likely to be due to eating almonds.

### **WHAT DID THEY FIND?**

Eating almonds was linked to lower levels of total cholesterol, LDL (bad) cholesterol and triglycerides in the blood but didn't affect HDL (good) cholesterol.

### **WHAT IS THE SIGNIFICANCE OF THIS STUDY?**

Many other studies have shown that eating nuts may help to reduce the risk of heart disease. This study adds to this research and indicates that eating almonds helps to lower levels of total cholesterol, LDL (bad) cholesterol and triglycerides while not negatively affecting the HDL (good) cholesterol. This is good news as raised levels of LDL cholesterol and triglycerides are all risk factors for heart disease.

## MAKING YOURSELF UNDERSTOOD

Follow these tips to ensure you're talking the same language as your clients and colleagues.

- **KNOW YOUR AUDIENCE:**

The level of acceptable scientific jargon you use should depend on who you are talking to.

- **ASSUME YOUR CLIENT HAS NO KNOWLEDGE AT ALL AND WORK UP FROM THAT.**

- **AVOID USING ABBREVIATIONS:**

You know what they mean but your client may not so spell out the abbreviation and explain what it means. For example, instead of saying, 'Your BMI is 27', say 'Your Body Mass Index is 27. This measurement indicates you are overweight'.

- **AVOID USING MEDICAL TERMS:**

For example, instead of saying, 'Your HbA1C suggests your blood sugar levels haven't been well controlled' say 'One of the blood test measurements suggests your blood sugar levels have, on average, been too high over the past few months'.

- **AVOID USING LONG, UNFAMILIAR OR DIFFICULT TO PRONOUNCE WORDS:**

For example, rather than mentioning docosahexanoic acid, refer to it as DHA or one of the main omega-3 fats found naturally in fish.

- **IF YOU'RE WRITING, TRY OUT DE-JARGONIZER**

([www.scienceandpublic.com](http://www.scienceandpublic.com)), a free, online tool designed to help health professionals and scientists reduce the amount of jargon they use so they can communicate with clients more easily.

### References

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