



The language of evidence

Writing about scientific evidence is harder than you might think. If you write *there is good evidence for XXX*, what meaning does your reader take away from that? That 1 really good study has shown a big effect? That an expert said so? That many studies have all shown a small effect?

The following tips take the lid off this fraught area of communication. Although the examples have a medical flavour, the same principles can be applied to any research or, indeed, discussions of 'evidence' in any context.

Avoid adjectives about quality

When referring to scientific evidence, cut out as many adjectives relating to quality as possible:

not **high-level, good, consistent, reasonable, compelling, poor evidence**

Try to avoid the word *evidence* altogether!

Instead:

- shift quality descriptors onto the research studies that have been done

a well-designed randomised controlled trial

- describe what the results mean

X is more effective than Y.

A meta-analysis of 6 large, well-designed randomised controlled trials showed that X was more effective than Y.

Avoid adjectives about quantity

Cut out adjectives of quantity (eg *little, limited, no*) because it is unclear whether they refer to the number of studies, the design of the studies or the size of effect recorded. Don't leave your reader guessing! For example:

- *there is no evidence* could mean that there have not been any studies at all or that there have been many studies that showed no statistically significant effect
- *limited evidence* could mean (among other things) that there have been several studies but the results were inconsistent or that there has been 1 large, well-designed study that showed a small but statistically significant effect
- *much evidence* could mean (among other things) that there have been many studies that all showed a very small effect or that there has been 1 well-designed study that showed a very large effect.

Instead, shift quantity descriptors onto one of the following:

- the research studies that have been done

there have been no studies

there have been 5 well-designed randomised controlled trials

- the size of the effect measured

There was no change in blood pressure.

Four large, well-designed randomised controlled trials consistently showed no significant difference between X and Y.

One large, well-designed randomised controlled trial showed that X was more effective than Y.

Four small clinical trials showed inconsistent results, so it is impossible to draw any conclusions about whether X is more or less effective than Y. Further well-designed trials are needed to answer this clinical question.

Remember, a well-designed research study provides the same quality of evidence, whether the results show a positive effect, a negative effect or no effect at all.

Don't use biased language

If there have not been any studies, you don't know whether X is better or worse than Y. Don't say:

There have been no studies that show that X is better/more effective/superior/more beneficial than Y.

Instead say:

There have been no studies that compare X and Y.

Non-existing evidence is just that; be careful not to imply that it exists and might be favourable for the intervention under consideration. Don't say:

Available/existing/current evidence shows little effect of X compared with Y. [which implies that 'the other' evidence may show an effect]

Instead say:

Several [include details] studies have shown no effect of X compared with Y.

Don't emphasise the positive at the expense of the negative:

Of the 8 trials included in the review, only 1 showed a positive effect.

really means:

Of the 8 trials included in the review, 7 showed a negative effect.



How to describe evidence – some simple tips

Type of study ^a	Result	Examples of evidence statements
Several well-designed studies	Positive effect (effective/beneficial)	<p>Three well-designed clinical trials showed that X decreases [outcome] compared with Y.</p> <p>Three good-quality studies showed that X is effective [beneficial] for ...</p>
Several well-designed studies	Negative effect (harmful)	<p>Three well-designed clinical trials showed that X increases [outcome] compared with Y.</p> <p>Three good-quality studies showed that X is less effective [harmful] than Y for ...</p>
Several well-designed studies	No significant effect ^b	<p>Three well-designed clinical trials showed no significant difference between X and Y.</p> <p>Three good-quality studies showed no significant difference between X and Y.</p> <p>Don't say 'there is no effect' – 'no effect' is impossible to prove in science, and studies that do not show a statistically significant effect may have wide confidence intervals that include biologically or clinically important effects.^c</p> <p>Don't say 'there is no evidence'. There is evidence – it just shows no significant effect!</p>
1 well-designed study	Positive or negative effect	<p>One well-designed trial has shown that X is more effective [or less effective] than Y ... but this finding needs to be confirmed by more trials.</p>
2 or more well-designed studies with conflicting results	At least 1 study shows a positive effect; at least 1 study shows no significant effect	<p>Two good-quality studies show conflicting [inconsistent] results for the relative effectiveness of X and Y.</p>
1 or more poorly designed studies	Positive or negative effect	<p>One small [poorly designed] clinical trial showed that X was better/worse than Y. Larger [better-designed] trials are needed to check this result.</p> <p>Don't say 'larger trials are needed to confirm this result' because it is not known whether the finding will be confirmed or refuted until the larger trials are done.</p>
1 or more poorly designed studies	No significant effect	<p>Several small studies have shown that X may not be effective for ..., but larger [better-designed] trials are needed to further investigate this effect.</p> <p>There have not been enough well-designed clinical trials to either support or refute ...</p>
No studies	Not applicable	<p>There have been no studies of the effect of ...</p> <p>The effect of X ... is not known.</p> <p>Don't say 'there is no evidence for ...'. This can be confused with a negative or not significant result.</p>

a The general term 'study' refers to any research studies (eg clinical trials, ecological studies). 'Well-designed' means a protocol that eliminates bias (eg randomised allocation to groups, blinded measurement of outcomes) and has enough subjects or measurements to allow accurate statistical analysis. Descriptors in the evidence statements will vary according to the type of research.

b The term 'significant' is used here as shorthand for 'statistically significant'.

c An effect can be statistically significant but not be of real biological or clinical importance (eg pain might increase but remain at a level that does not affect daily life).