

## Trust in publication

From: [Key Concepts for assessing claims about treatment effects and making well-informed treatment choices \(Version 2022\)](#)

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### 1.4d Do not assume that peer review and publication is sufficient.

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#### Explanation

Even though a comparison of treatments – whether in a single study or in a review of similar studies – has been published in a prestigious journal, it may not be a [fair comparison](#) and the results may not be reliable. Peer review (assessment of a study by others working in the same field) does not guarantee that published studies are reliable. Assessments vary and may not be systematic. Similarly, just because a study is widely publicised does not mean that it is trustworthy.

Sometimes, research that has been peer reviewed and published is so untrustworthy that it is retracted. About half of all retractions involve misconduct, including fabrication or falsification [[Brainard 2018](#), [Budd 2011](#)]. Perhaps the most widely-known example of a widely-publicised paper that was subsequently retracted was a small study published in *The Lancet* which suggested that measles, mumps and rubella vaccination might cause autism [[Flaherty 2011](#)]. Publication of that paper contributed to vaccine scepticism and led to a decrease in vaccinated children, outbreaks of measles, serious illness, and at least four deaths that could have been prevented.

Although a small proportion of published papers are retracted, many more are corrected or refuted by more reliable research [[Oransky 2021](#)]. Journals rely on peer review to ensure the quality of the research they publish. However, peer review is highly variable, inconsistent, and flawed [[Smith 2006](#), [Smith 2010](#)]. For the most part it is done by volunteers. Few peer reviewers have formal training and they commonly do not detect major errors. For example, the *British Medical Journal* (BMJ) sent three papers, each of which had nine major methodological errors inserted, to about 600 peer reviewers [[Schroter 2008 \(RS\)](#)]. On average, the peer reviewers detected about one-third of the errors in each paper. Half of the peer reviewers were given brief training, which had only a slight impact on improving error detection.

#### Basis for this concept

Published information written for busy decision makers sometimes contains misleading information on the effects of treatments [[Antman 1992 \(SR\)](#)]. Published, peer-reviewed comparisons of treatments often have a high risk of [bias](#), which can result in overestimating or underestimating the effects and cost-effectiveness of treatments [[Bell 2006 \(SR\)](#), [Page 2016a \(SR\)](#), [Savović 2012a \(SR\)](#), [Savović 2012b \(SR\)](#)]. Before accepting the results of published randomized trials or [systematic reviews](#), decision makers should critically appraise their methods to identify sources of bias [[Guyatt 1993](#), [Oxman 1994](#)].

Published reports of [randomized trials](#) frequently fail to consider the results in the context of prior trials [[Robinson 2011 \(SR\)](#)], and sometimes selectively cite other research [[Duyx 2017 \(SR\)](#)]. In addition, published reports of randomized trials are often inconsistent with their protocols, and “[statistically significant](#)” results are more likely to be reported than results that are not statistically significant [[Dwan 2013 \(SR\)](#)].

Reports of randomized trials are often inadequate for assessing the validity of study results [[Haidich 2011 \(SR\)](#), [Hopewell 2010 \(SR\)](#), [Mills 2005 \(SR\)](#)]. Although reporting of randomized trials has improved, there is still room for further improvement [[To 2013 \(SR\)](#)].

Editorial peer review is used as a tool to assess and improve the quality of submissions to journals. However, there is very little evidence of the effects of peer review on the quality of published research evidence [[Jefferson 2007](#)]. Judgements about the quality of information are often based on the reputation of the journal. However, this does not guarantee high quality information. Journal impact factor, a measure that reflects the prestige of a journal, may have little or no association with the quality of published research [[Masic 2020 \(RS\)](#), [Pölkki 2014 \(SR\)](#), [Sagınur 2020 \(SR\)](#)].

Published studies that show benefits, especially large benefits, are more likely to be noticed than studies that do not [[Duyx 2017 \(SR\)](#), [Ioannidis 2005 \(SR\)](#)], but they are not necessarily trustworthy. Many published studies are too small to have reliable results, and small studies are more likely to report extreme results than large studies [[Schwab 2021 \(SR\)](#)]. Subsequent studies, which often contradict those studies or show smaller benefits, [[Ioannidis 2005 \(SR\)](#), [Serra-Garcia 2021 \(SR\)](#)], are accorded less attention [[Serra-Garcia 2021 \(SR\)](#)]. Research reports commonly emphasise findings that suggest benefits, while ignoring other findings [[Chiu 2017 \(SR\)](#)]. Press releases are often designed to attract favourable media attention and news reports of those studies do the same [[Yavchitz 2012 \(RS\)](#)]. News reports about published comparisons of treatments often do not consider the reliability of the results [[Oxman 2022 \(SR\)](#)].

## Implications

Always consider whether a published comparison of the effects of treatments is fair and whether the results are reliable. Peer review is a poor indicator of reliability.

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