Consistently measured outcomes

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

2.1d Consider whether outcomes were assessed similarly in the people being compared.

Explanation

If a possible treatment outcome is assessed differently in two treatment comparison groups, differences in that outcome may be due to *how* the outcome was assessed rather than *because* of the treatments received by people in each group. For example, if outcome assessors believe that a particular treatment works and they know which patients have received that treatment, they may be more likely to record better outcomes in those who have received the treatment. One way of preventing this is to keep outcome assessors unaware of ("blind" to) which people have been allocated to which treatment.

For example, a randomized trial compared laser surgery to medical treatment for patients with angina (chest pain caused by reduced blood flow to the heart) *[Oesterle 2000 (RS)]*. The severity of angina after one year was assessed by the investigators who were aware of treatment assignment (i.e. unblinded) and by trained interviewers who were not aware (blinded). Comparison of the non-blinded investigators' assessments to the blinded interviewers' assessments showed that the investigators assessed the angina as being less severe much more often in the laser surgery group than in the medical treatment group. Twenty-eight percent of the apparent angina improvement could be attributed to bias.

Systematic differences in outcome assessment ("measurement bias") can make treatment effects appear either larger or smaller than they actually are. Blinding is less important for "objective" outcomes, like death, than for "subjective" outcomes, like pain.

Basis for this concept

Comparisons for blinded and non-blinded outcome assessment within randomized trials, like the above example, have been summarised in three systematic reviews *[Hróbjartsson 2012 (SR), Hróbjartsson 2013 (SR), Hróbjartsson 2014b (SR)]*. For yes/no (dichotomous) outcomes, treatment effects were, on average, larger when assessed non-blinded compared to blinded assessments *[Hróbjartsson 2012 (SR)]*. For outcomes that were assessed using a measurement scale, treatment effects were, on average, also larger when assessed non-blinded compared to blinded assessments *[Hróbjartsson 2013 (SR)]*. The same was found for time-to-event outcomes *[Hróbjartsson 2014b (SR)]*. But in some situations, treatment effects were smaller when assessed nonblinded compared to blinded. A likely explanation for this is that the new treatment being evaluated was more practical and less expensive than the established treatment, and the investigators' expectation was that it might not be as beneficial.

Several systematic reviews have investigated the influence of blinding and other characteristics of randomized trials on effect estimates, as described in the basis for Concept 2.1b. Some have found that, on average, studies with inadequate blinding of outcome assessors or inadequate "double blinding" have larger effect estimates than studies with adequate blinding, primarily for subjective outcomes *[Page 2016a (SR), Savović 2012b (SR)]*. Others have had inconclusive results *[Dechartres*

2016 (SR), Moustgaard 2020 (SR), Wang 2021 (SR)]. Because these reviews are based on comparisons between studies, they have a high risk of confounding by other characteristics of the trials included in each meta-analysis. So, the reviews of comparisons within randomized trials provide a more reliable basis for this concept.

Although it is not always possible to blind participants in randomized trials, it generally is possible to blind outcome assessors. However, for some outcome measures, such as patient-reported outcomes, this is not possible if the patients participating in a trial cannot be blinded. It is also sometimes possible to blind outcome assessors in non-randomized studies. When blinding is not possible, it is important to consider the possibility of measurement bias.

Implications

Be cautious about relying on the results of treatment comparisons if outcomes were not assessed in the same way in the different treatment comparison groups. The results of such comparisons can be misleading.

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Systematic reviews

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Research studies

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