

Chapter 5

Confidence Intervals

The 95% confidence interval of a study represents an interval covering 95% of many studies similar to our study. It tells you something about what you can expect from future data: if you repeat the study, you will be 95% sure that the outcome will be within the 95% confidence interval. The 95% confidence of a study is found by the equation

$$95\% \text{ confidence interval} = \text{mean} \pm 2 \times \text{standard error (SE)}$$

The SE is equal to the standard deviation (SD)/ \sqrt{n} , where n = the sample size of your study. The SD can be calculated from the procedure reviewed in the Chap. 2.

With an SD of 1.407885953 and a sample size of $n = 8$,

$$\begin{aligned} \text{your SE} &= 1.407885953 / \sqrt{8} \\ &= 0.4977 \end{aligned}$$

With a mean value of your study of 53.375

$$\begin{aligned} \text{your 95\% confidence interval} &= 53.375 \pm 2 \times 0.4977 \\ &= \text{between } 52.3796 \text{ and } 54.3704. \end{aligned}$$

The mean study results are often reported together with 95% confidence intervals. They are also the basis for equivalence studies, which will be reviewed in the next chapter. Also for study results expressed in the form of numbers of events, proportion of deaths, odds ratios of events, etc., 95% confidence intervals can be readily calculated. Plenty software on the Internet is available to help you calculate the correct confidence intervals.