**Assess the publication bias - China**

**– stored in the *results* Excel document, *publication\_bias* sheet**

**These four funnel plots, *funnelplot\_strongeffect\_china.pdf, funnelplot\_strongeffect\_otherregion.pdf,* and *funnelplot\_average\_china.pdf, funnelplot\_average\_otherregion.pdf***

**Strong effect**

**Egger’s test**

**Coefficients**:

* **Xintrcpt (Intercept)**: The estimate of 0.2829 with a standard error of 0.1095 and a t-value of 2.583 indicates a statistically significant intercept (p-value = 0.0363). This significant intercept suggests evidence of publication bias in the meta-analysis, implying that smaller studies (or those with higher standard errors) may be reporting larger effect sizes.
* **Xsei (Slope)**: The coefficient for the slope is 0.8230 with a standard error of 1.1004, leading to a t-value of 0.748. This is not statistically significant (p-value = 0.4789), suggesting no strong linear trend exists between study size and effect size after accounting for the intercept.

The results of Egger's test, particularly the significant intercept, suggest the presence of publication bias in the meta-analysis. This implies that smaller or less precise studies are more likely to report larger effect sizes, which could skew the overall meta-analysis results towards more significant findings. However, the non-significant slope indicates that the effect of study precision on the magnitude of the effect size, beyond the bias indicated by the intercept, is not apparent.

Given the evidence of publication bias, interpretations of the meta-analysis results should be made with caution. Researchers should consider the potential for overestimation of effect sizes and explore sensitivity analyses or other methods to assess the robustness of the meta-analysis findings to the influence of publication bias.

**Begg’s test**

**Kendall's tau**: A value of 0.1111 suggests a very weak, positive correlation between the effect sizes and their variances or standard errors, which implies that larger or more precise studies do not systematically report more significant or less significant results compared to smaller or less precise ones.

**p-value**: A p-value of 0.7614 far exceeds this threshold, indicating that the weak positive correlation observed is not statistically significant. Therefore, there is no evidence to reject the null hypothesis of no publication bias based on this test.

The result of Begg's test, with Kendall's tau being 0.1111 and a p-value of 0.7614, suggests that there is no statistically significant evidence of publication bias in the meta-analysis. This means that the funnel plot of study effect sizes against their variances or standard errors is likely to be symmetrical, or at least, any asymmetry present is not statistically significant.

However, it's important to note that the absence of statistically significant evidence for publication bias, according to Begg's test, does not definitively prove its absence. The test's sensitivity can vary depending on the number of studies included in the meta-analysis and their underlying distribution. Therefore, these results should be interpreted in conjunction with other methods and the broader context of the research area to assess publication bias fully.

**Trim and Fill test**

Missing Studies Estimation

* **Estimated number of missing studies on the left side**: 0, with a standard error (SE) of 1.4142. This outcome suggests that, according to the Trim and Fill method, no studies are estimated to be missing due to publication bias on the left side of the funnel plot.
* **Test of H0 (no missing studies on the left side)**: The p-value of 0.5000 indicates no statistical evidence to suggest the presence of missing studies due to publication bias. This high p-value supports the null hypothesis that there is no asymmetry in the funnel plot attributable to unpublished studies.

The Trim and Fill test results suggest no evidence of publication bias in this meta-analysis, as indicated by an estimated zero missing studies and a non-significant test for missing studies. However, significant heterogeneity among the included studies is a critical consideration when interpreting the results. Despite this heterogeneity, the adjusted overall effect size remains statistically significant, indicating a real association in the meta-analyzed data after accounting for potential biases and heterogeneity. The findings should be interpreted cautiously due to the heterogeneity observed.

**Average effect**

**Egger’s test**

**Coefficients**:

* **Xintrcpt (Intercept)**: The estimate of 0.2829 with a standard error of 0.1095 and a t-value of 2.583 indicates a statistically significant intercept (p-value = 0.0363). This significant intercept suggests evidence of publication bias in the meta-analysis, implying that smaller studies (or those with higher standard errors) may be reporting larger effect sizes.
* **Xsei (Slope)**: The coefficient for the slope is 0.8230 with a standard error of 1.1004, leading to a t-value of 0.748. This is not statistically significant (p-value = 0.4789), suggesting no strong linear trend exists between study size and effect size after accounting for the intercept.

The results of Egger's test, particularly the significant intercept, suggest the presence of publication bias in the meta-analysis. This implies that smaller or less precise studies are more likely to report larger effect sizes, which could skew the overall meta-analysis results towards more significant findings. However, the non-significant slope indicates that the effect of study precision on the magnitude of the effect size, beyond the bias indicated by the intercept, is not apparent.

Given the evidence of publication bias, interpretations of the meta-analysis results should be made with caution. Researchers should consider the potential for overestimation of effect sizes and explore sensitivity analyses or other methods to assess the robustness of the meta-analysis findings to the influence of publication bias.

**Begg’s test**

**Kendall's tau**: A value of 0.1111 suggests a very weak, positive correlation between the effect sizes and their variances or standard errors, which implies that larger or more precise studies do not systematically report more significant or less significant results compared to smaller or less precise ones.

**p-value**: A p-value of 0.7614 far exceeds this threshold, indicating that the weak positive correlation observed is not statistically significant. Therefore, there is no evidence to reject the null hypothesis of no publication bias based on this test.

The result of Begg's test, with Kendall's tau being 0.1111 and a p-value of 0.7614, suggests that there is no statistically significant evidence of publication bias in the meta-analysis. This means that the funnel plot of study effect sizes against their variances or standard errors is likely to be symmetrical, or at least, any asymmetry present is not statistically significant.

However, it's important to note that the absence of statistically significant evidence for publication bias, according to Begg's test, does not definitively prove its absence. The test's sensitivity can vary depending on the number of studies included in the meta-analysis and their underlying distribution. Therefore, these results should be interpreted in conjunction with other methods and the broader context of the research area to assess publication bias fully.

**Trim and Fill test**

Missing Studies Estimation

* **Estimated number of missing studies on the left side**: 0, with a standard error (SE) of 1.4142. This outcome suggests that, according to the Trim and Fill method, no studies are estimated to be missing due to publication bias on the left side of the funnel plot.
* **Test of H0 (no missing studies on the left side)**: The p-value of 0.5000 indicates no statistical evidence to suggest the presence of missing studies due to publication bias. This high p-value supports the null hypothesis that there is no asymmetry in the funnel plot attributable to unpublished studies.

The Trim and Fill test results suggest no evidence of publication bias in this meta-analysis, as indicated by an estimated zero missing studies and a non-significant test for missing studies. However, significant heterogeneity among the included studies is a critical consideration when interpreting the results. Despite this heterogeneity, the adjusted overall effect size remains statistically significant, indicating a real association in the meta-analyzed data after accounting for potential biases and heterogeneity. The findings should be interpreted cautiously due to the heterogeneity observed.

**Assess the publication bias – other region**

**– stored in the *results* Excel document, *publication\_bias* sheet**

**These four funnel plots, *funnelplot\_strongeffect\_china.pdf, funnelplot\_strongeffect\_otherregion.pdf,* and *funnelplot\_average\_china.pdf, funnelplot\_average\_otherregion.pdf***

**Strong effect**

**Egger’s test**

**Coefficients**:

* **Xintrcpt (Intercept)**: The intercept estimate is 0.3023 with a standard error of 0.1055, resulting in a t-value of 2.867. This intercept is statistically significant with a p-value of 0.0241 (p < 0.05), indicating evidence of publication bias in the meta-analysis. This suggests that smaller or less precise studies report larger effect sizes.
* **Xsei (Slope)**: The slope coefficient is 0.2560 with a standard error of 1.0565, leading to a t-value of 0.242. This is not statistically significant (p-value = 0.8154), indicating no significant trend in the effect sizes with respect to the precision of the studies.

The results of Egger's test, particularly the significant intercept, suggest the presence of publication bias in the meta-analysis. This indicates a tendency for smaller or less precise studies to report more significant effects, which could potentially overestimate the true effect size in the meta-analysis. However, the slope's lack of significance suggests that the relationship between study precision and effect size magnitude is not strong once the intercept is accounted for.

Given the evidence of publication bias, interpretations of the meta-analysis results should be made with caution. Researchers should consider the potential for overestimating effect sizes and explore sensitivity analyses or other methods to assess the robustness of the meta-analysis findings to the influence of publication bias.

**Begg’s test**

**Kendall's tau**: A value of 0.1667 suggests a very weak positive correlation between the effect sizes and the precision of the studies included in your meta-analysis. This means that there is a slight tendency for larger (or more precise) studies to report higher (or more positive) effect sizes, but this tendency is very weak.

**P-value**: The p-value associated with Kendall's tau is 0.6122. This p-value tests the null hypothesis that there is no correlation between effect sizes and study precision (i.e., no publication bias). The common threshold for statistical significance is a p-value less than 0.05. Since your p-value is much higher (0.6122), it indicates that the observed correlation (or lack thereof) is not statistically significant. Therefore, based on Begg's test, there is no evidence to reject the null hypothesis of no publication bias in this meta-analysis.

However, it's important to note that the absence of statistically significant evidence for publication bias, according to Begg's test, does not definitively prove its absence. The test's sensitivity can vary depending on the number of studies included in the meta-analysis and their underlying distribution. Therefore, these results should be interpreted in conjunction with other methods and the broader context of the research area to assess publication bias fully.

**Trim and Fill test**

Missing Studies Estimation

* **Estimated number of missing studies on the left side**: 0, with a standard error (SE) of 1.4142. This outcome suggests that, according to the Trim and Fill method, no studies are estimated to be missing due to publication bias on the left side of the funnel plot.
* **Test of H0 (no missing studies on the left side)**: The p-value of 0.5000 indicates no statistical evidence to suggest the presence of missing studies due to publication bias. This high p-value supports the null hypothesis that there is no asymmetry in the funnel plot attributable to unpublished studies.

The Trim and Fill test results suggest no evidence of publication bias in this meta-analysis, as indicated by an estimated zero missing studies and a non-significant test for missing studies. However, significant heterogeneity among the included studies is a critical consideration when interpreting the results. Despite this heterogeneity, the adjusted overall effect size remains statistically significant, indicating a real association in the meta-analyzed data after accounting for potential biases and heterogeneity. The findings should be interpreted cautiously due to the heterogeneity observed.