**Subgroup analysis – nation China vs Other region**

**Meta-analysis (after removing the papers)**

**Stored in the *results* Excel document, *meta\_analysis* sheet, and the forest plot *forestplot\_strongeffect\_china.pdf*, *forestplot\_strongeffect\_otherregion.pdf*, and *forestplot\_average\_china.pdf, forestplot\_average\_otherregion.pdf***

**Strong effect - China**

**Random Effects Model**: Provides an OR of 1.5121 with a 95% CI of [1.1851; 1.9294]. This model, accounting for between-study variability, suggests a slightly stronger association than the common effect model but with a wider CI, reflecting greater uncertainty due to heterogeneity.

**Heterogeneity Assessment**

* **Tau^2 (0.0970)** and **Tau (0.3115)** quantify the variance among true effect sizes, indicating a significant amount of heterogeneity.
* **I^2 (75.3%)** signifies that a large portion of the variation across studies is due to heterogeneity rather than chance. An I^2 higher than 50% is considered substantial heterogeneity.
* **H^2 (2.01)** further supports the presence of heterogeneity, indicating the total variance is about twice the expected variance from sampling error alone.

**Test for Heterogeneity**

* **Q statistic (32.35) with 8 degrees of freedom** and a **p-value < 0.0001** strongly indicates significant heterogeneity among the included studies, justifying the use of a random effects model over a common effect model.
* The meta-analysis demonstrates a statistically significant overall effect, with an increased odds ratio indicating a moderate association across the studies. The results from the random effects model, which are more relevant due to significant heterogeneity among studies, suggest a slightly stronger association than the common effect model.
* The substantial heterogeneity, as shown by the I^2 and H^2 statistics, and the significant test for heterogeneity, emphasize the need for cautious interpretation of the overall effect size. The diversity in effect sizes across the studies suggests that the true effect may vary in different contexts or populations. This variability underscores the importance of considering individual study characteristics and potential sources of heterogeneity when interpreting the overall results and applying them to specific situations.

**Average Effect - China**

**Random Effects Model**: An OR of 1.4006 with a 95% CI [1.1574; 1.6949], slightly higher than the common effect model, accounts for between-study variability. The model still shows a statistically significant effect (p=0.0005), though with wider CIs reflecting the acknowledged heterogeneity.

**Heterogeneity Assessment**

* **Tau^2 (0.0492)** and **Tau (0.2218)** measure the variance among true effect sizes, suggesting some degree of variability beyond sampling error.
* **I^2 (71.6%)**: Indicates a significant portion (over 70%) of the variation across studies is due to heterogeneity rather than chance.
* **H^2 (1.88)**: Further supports the presence of heterogeneity, showing the total variance is nearly twice what would be expected from sampling error alone.

**Test for Heterogeneity**

* **Q statistic (28.22) with 8 degrees of freedom and a p-value of 0.0004** confirms significant heterogeneity among the studies, reinforcing the choice of a random effects model for the analysis.

**Strong effect – Other region**

**Random Effects Model**:

Provides an OR of 1.1417 with a broader 95% CI [0.8446; 1.5433], reflecting adjustments for heterogeneity among studies. The effect is still not statistically significant (p-value = 0.3889), but the estimate is slightly higher, indicating a more pronounced effect when accounting for variability among studies.

**Heterogeneity Assessment**

* **Tau^2 (0.1334)** and **Tau (0.3653)** measure the variance among true effect sizes, suggesting moderate between-study variability.
* **I^2 (61.1%)**: Indicates a substantial proportion of total variation across studies is due to heterogeneity rather than chance. This suggests that not all variability can be explained by sampling error alone.
* **H^2 (1.60)**: Further supports the presence of heterogeneity, showing the total variance is 60% higher than expected from sampling error.

**Test for Heterogeneity**

**Q statistic (23.16) with 9 degrees of freedom and a p-value of 0.0058** indicates significant heterogeneity among the included studies, reinforcing the choice of the random effects model over the common effect model.

The meta-analysis results, through both common and random effects models, suggest a slight but not statistically significant increase in odds. However, the presence of substantial heterogeneity, as evidenced by I^2 and the significant Q statistic, indicates that the studies' effects are not consistent across different settings or populations.

Given the observed heterogeneity, it's important for readers to consider the individual study contexts, such as population characteristics and study methodologies, when interpreting the overall effect size. The lack of statistical significance in the overall effect size suggests that, on average, the intervention or exposure being studied does not have a strong association with the outcome across the studies included in this meta-analysis. However, the variability among studies underscores the need for cautious interpretation and further investigation into potential sources of heterogeneity.

**Average Effect – Other region**

**Random Effects Model**: n OR of 1.0134 with a 95% CI [0.8409; 1.2212], indicates no significant overall effect with a z-score (0.14) and p-value (0.8891), despite adjustments for heterogeneity.

**Heterogeneity Assessment**

* **Tau^2 (0.0492)** and **Tau (0.2218)** measure the variance among true effect sizes, suggesting some degree of variability beyond sampling error.
* **I^2 (71.6%)**: Indicates a significant portion (over 70%) of the variation across studies is due to heterogeneity rather than chance.
* **H^2 (1.88)**: Further supports the presence of heterogeneity, showing the total variance is nearly twice what would be expected from sampling error alone.

**Test for Heterogeneity**

* **Q statistic (28.22) with 8 degrees of freedom and a p-value of 0.0004** confirms significant heterogeneity among the studies, reinforcing the choice of a random effects model for the analysis.