Step-by-Step Guide for Nurses to Conduct a Meta-Analysis of Dichotomous Data

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1. Define the research question

- Clearly articulate the clinical question using PICOT framework
- *Example: Does **depression (I)** increase the **risk of dementia (O)** in patients **with atrial fibrillation (P)** compared with **people without depression (C)**?*

2. Follow current standards

- Adhere to current guidelines, such as the Cochrane Handbook for Systematic Reviews of Interventions and PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses).

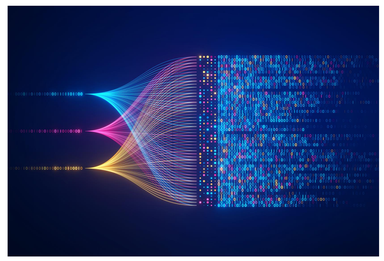
3. Search and select studies

- Conduct a comprehensive literature search using databases such as PubMed, Scopus, and Cochrane Library.
- Apply your inclusion-exclusion criteria to the results.

Example: Following duplicate removal, we assessed the title and abstract of 2340 publications. In this process, we excluded 1735 for not been related to the topic. After the initial screening, we scrutinized the remaining 367 studies. Among these, 352 were excluded due to failure to meet the predetermined inclusion and exclusion criteria. Consequently, 10 studies were left for the analysis.

4. Extract data

- Collect data on study characteristics such as sample size, intervention, control and dichotomous outcomes such as number of events vs. non-events.
- Use standardized forms or software to ensure consistency in data extraction.



5. Assess the quality of the studies

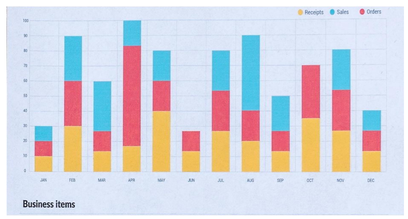
- Evaluate the quality and risk of bias in the selected studies using the appropriate tools, according to the type of study such as the ROBINS-I tool.

6. Perform statistical analysis

- Calculate effect sizes such as Odd Ratio (OR) or Risk Ratio (RR)
- Choose a fixed-effect or random-effects model depending on the heterogeneity of the studies.
- Assess heterogeneity using I^2 statistics.

7. Interpret the results

- Interpret the effect sizes and confident intervals to determine the overall effect.
- Discuss the clinical relevance of the findings and potential impact in nursing practice.
- Assess the homogeneity of the studies by analyzing the similarities in study design, population, interventions, and outcomes. If studies are homogeneous, they are more likely to yield a reliable pooled estimate.

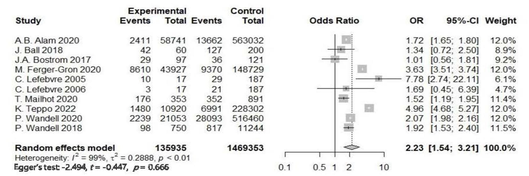


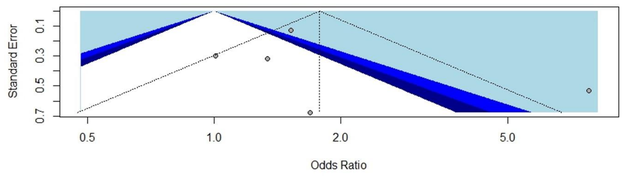
8. Compare results, address limitations and draw conclusions

- Compare your findings with those of other studies to identify consistencies or discrepancies.
- Discuss the limitations of your meta-analysis, such as study quality, potential biases, or sample size.
- Draw clear conclusions based on the evidence, highlighting implications for nursing practice and areas for future research.

9. Report and present findings

- Present your findings, in a clear and structured manner, including forest plots to visualize the meta-analysis. Highlight key conclusions, implications for nursing practice, and any limitations of the meta-analysis.





References

1. Higgins J.P.T., Thomas J., Chandler J., Cumpston M., Li T., Page M.J., Welch VA (Eds.). Cochrane handbook for systematic reviews of interventions version 6.4 (updated August 2023). Cochrane, 2023.
2. D. Moher, A. Liberati, J. Tetzlaff, D.G. Altman, Prisma Group Preferred reporting items for systematic reviews and meta-analyses: The PRISMA statement. International Journal of Surgery, 8 (5) (2010), pp. 336-341

Scan the QR code below to see an example of a Meta-analysis and my contact information: