Causal Discovery in Gut Microbes for PCOS

Mariana Paco Mendivil
mpacomendivil@ucsd.edu

Candus Shi
c6shi@ucsd.edu

Nicole Zhang
nwzhang@ucsd.edu

Biwei Huang
bih007@ucsd.edu

Jelena Bradic
jbradic@ucsd.edu

Abstract

The human gut microbiome has become a significant factor in the understanding of metabolic health...

Code:
https://github.com/nzhang20/Causal-Discovery-for-Biomedical-Applications

1 Introduction

1.1 Literature Review

1.2 Data

To answer our research question, we used individual participant data (IPD) meta analysis data from a systematic review conducted by (Yang et al. 2024). This means the dataset is an aggregation of the 14 studies that were included in the systematic review, but at the individual level. This granularity gives us more data and statistical power behind our results rather than using just one PCOS study. Although IPD meta analyses have these advantages as well as advantages over regular aggregated meta analyses, there are some glaring issues that must be addressed before we work with this dataset as is. In particular, the dataset is clustered because it consists of participants from different studies where each study had their own unique recruitment and sampling methods. Thus, we must account for the clustering before running any analyses on this large aggregated dataset (Riley, Lambert and Abo-Zaid 2010).

2 Methods

3 Results

4 Discussion

5 Conclusion

References

Riley, Richard D, Paul C Lambert, and Ghada Abo-Zaid. 2010. "Meta-analysis of individual participant data: rationale, conduct, and reporting." *BMJ* 340. [Link]

Yang, Yanan, Jiale Cheng, Chongyuan Liu, Xiaopo Zhang, Ning Ma, Zhi Zhou, Weiying Lu, and Chongming Wu. 2024. "Gut microbiota in women with polycystic ovary syndrome: an individual based analysis of publicly available data." *eClinicalMedicine* 77 . [Link]

Appendices