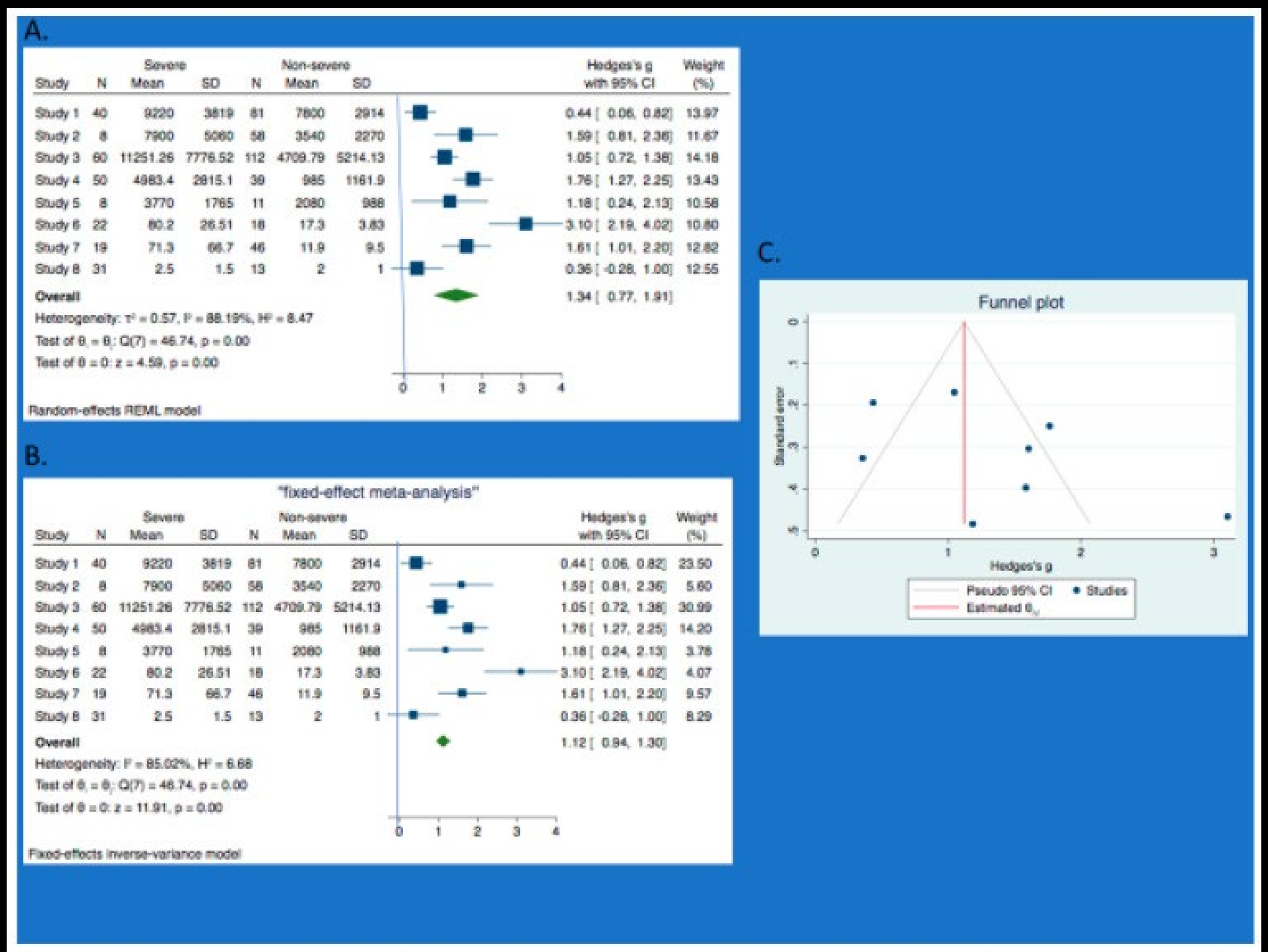
Calprotectin Metadata in COVID-19



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* Circulating calprotectin is elevated in COVID-19
* Higher levels in severe cases of COVID-19 offer opportunity for risk stratification and outcome prediction
* Potential therapeutic strategy as a druggable target for TASQUINIMOD

Calprotectin, an Emerging Biomarker of Interest in COVID-19: A Systematic Review and Meta-Analysis

Raphael Udeh, Shailesh Advani, Luis García de Guadiana Romualdo and Xenia Dolja-Gore

INTRODUCTION

- RQ 1: What is the difference in calprotectin level between patients with and without severe COVID-19?
- RQ 2: What is the role of calprotectin as a marker of disease progression and as an outcome predictor?
- Background: Varied clinical course described for COVID-19 – such that mild/moderate cases often recover while severe cases could end up in the intensive care unit [ICU] or die
- Recent evidence had earlier shown that calprotectin has an expanded potential role as a diagnostic and stratifying tool in COVID-19 patients [Silvin et al, 2020].
- Hence, our systematic review aimed at evaluating calprotectin levels in severe and non-severe cases of COVID-19.

METHODS

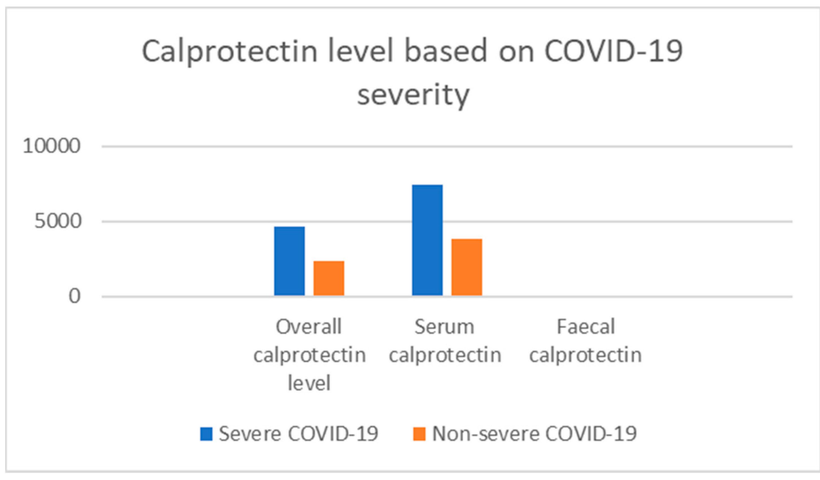
Databases searched include MEDLINE, EMBASE, the Cochrane Library, Web of Science, and MedRxiv.

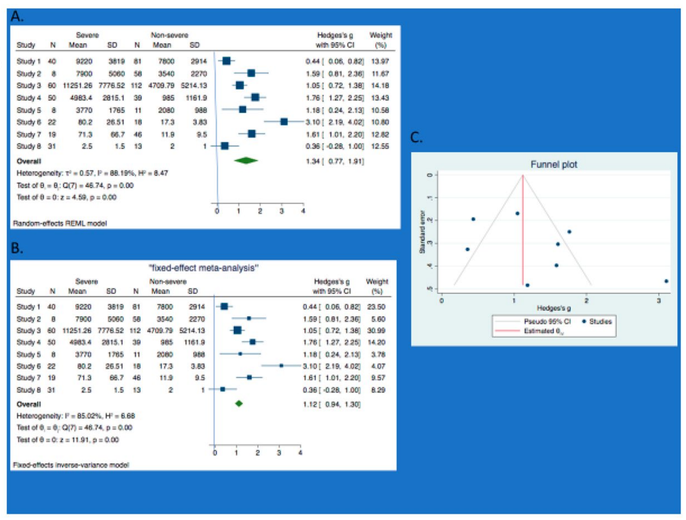
Stata was employed in meta-analysis to compare the serum/faecal levels of calprotectin between severe and non-severe COVID-19 infections.

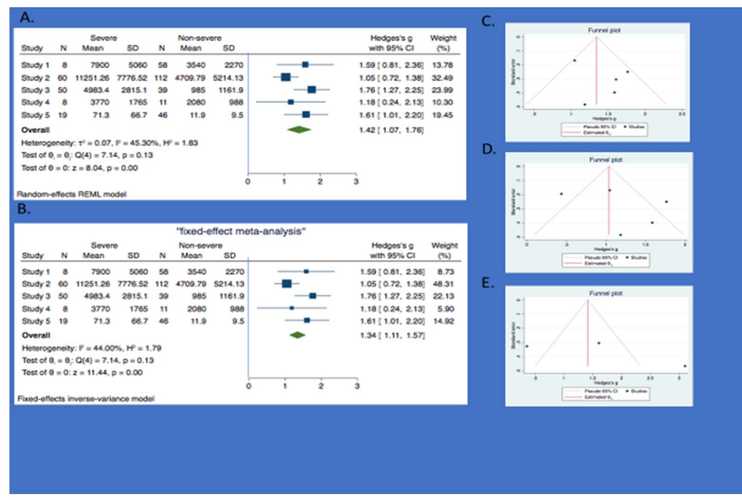
RESULTS

- A pooled analysis of data in the 8 quantitative studies from 613 patients who were RT-PCR positive for COVID-19 (average age = 55 years; 52% males) showed an overall estimate as 1.34 (95%CI: 0.77, 1.91).

Stata was further employed to carry out an in-depth investigation of the in-between study heterogeneity.All the other correlations in the ammo bar.







CONCLUSION

- "Calprotectin is significantly elevated in COVID-19 patients who develop the severe form of the disease, and it also has prognostic importance.

REFERENCES

*Silvin et al. Cell. 2020 Sep 17;182(6):1401-18.

Calprotectin Metadata in COVID-19 | Recent Evidence

Cell

Elsevier

Elevated Calprotectin and Abnormal Myeloid Cell Subsets Discriminate Severe from Mild COVID-19

Aymeric Silvin, Nicolas Chapuis, [...], and Eric Solary

Additional article information

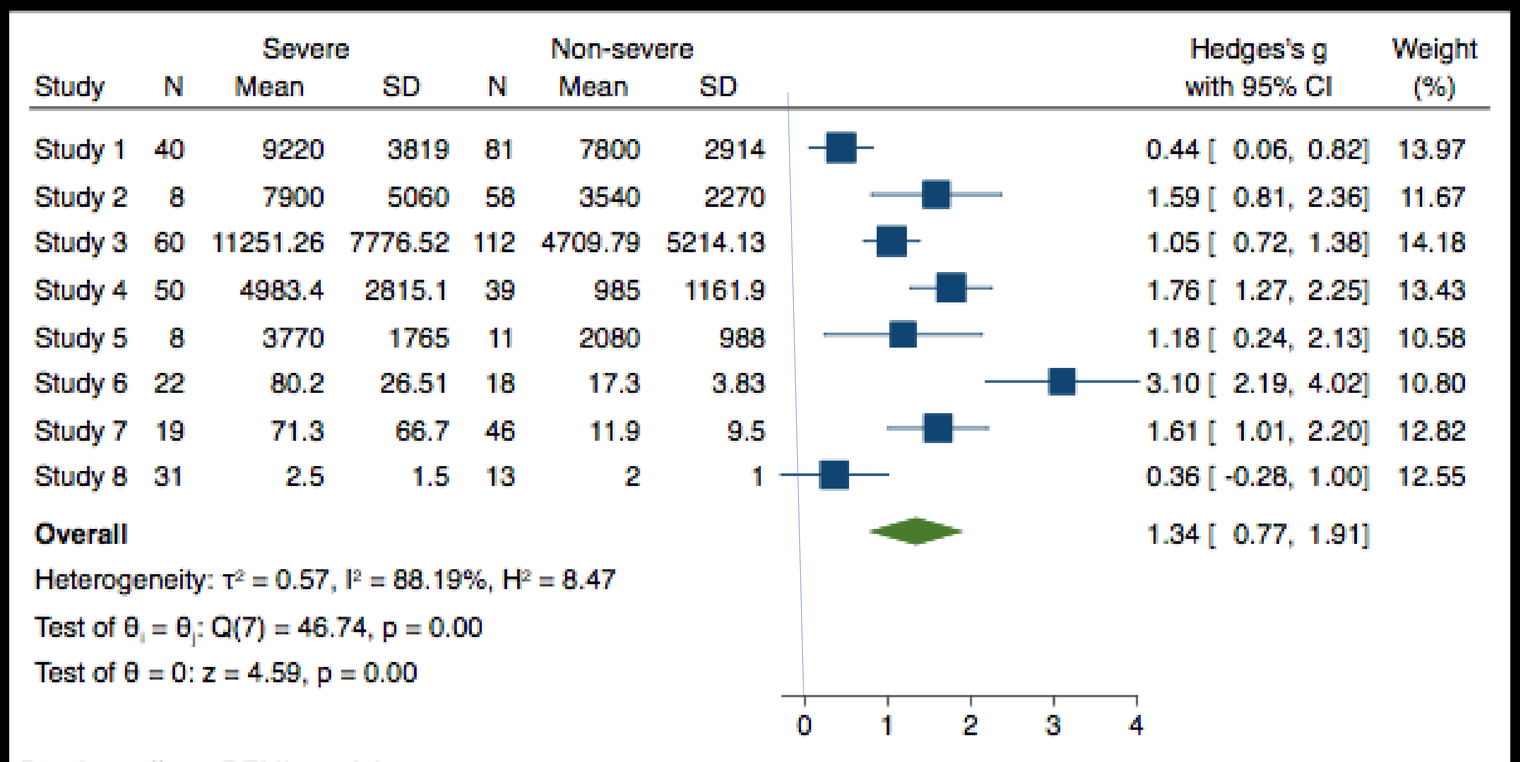
Associated Data

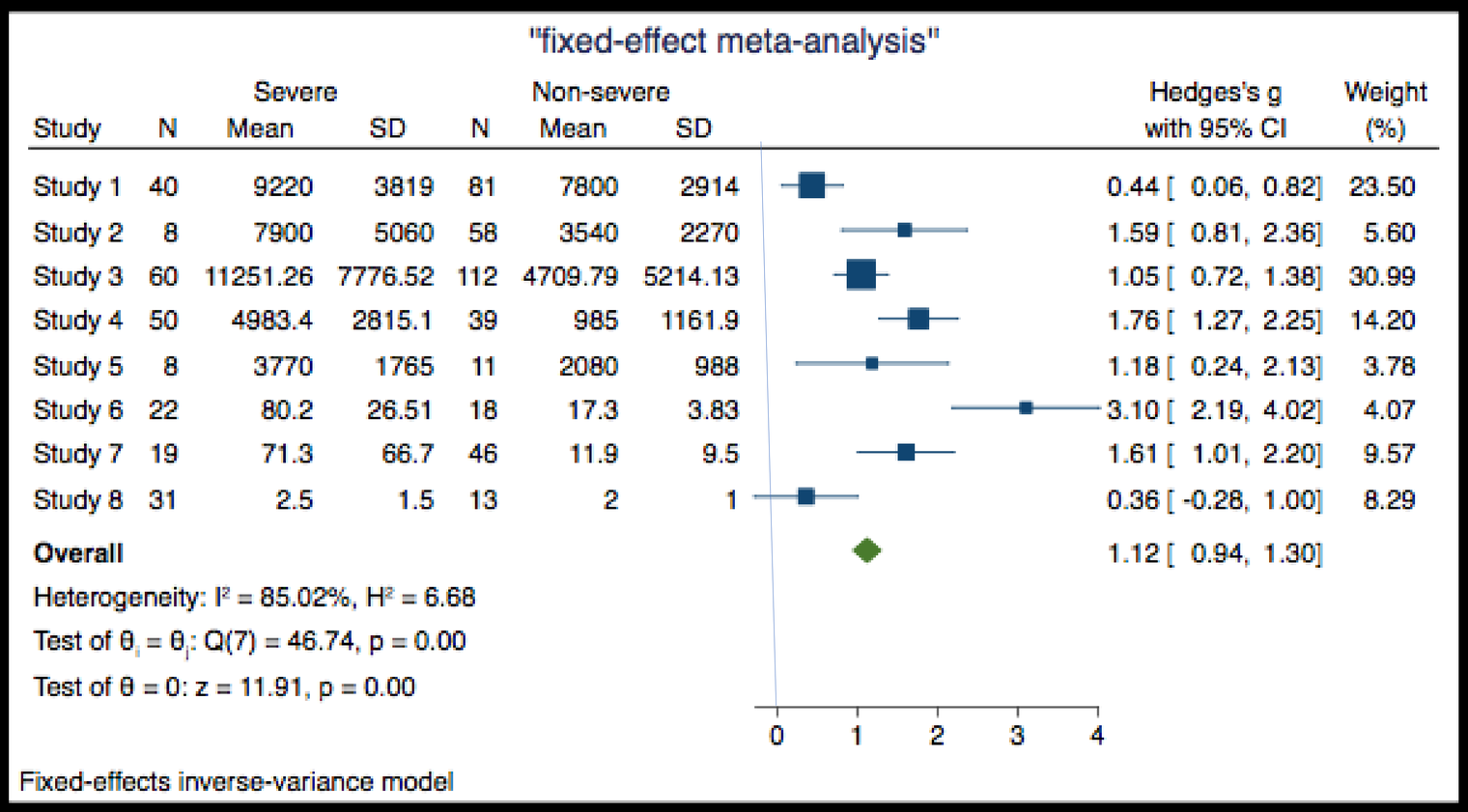
Supplementary Materials

Data Availability Statement

Abstract

- Blood myeloid cells are known to be dysregulated in coronavirus disease 2019 (COVID-19), caused by SARS-CoV-2. It is unknown whether the innate myeloid response differs with disease severity and whether markers of innate immunity discriminate high-risk patients. Thus, we performed high-dimensional flow cytometry and single-cell RNA sequencing of COVID-19 patient peripheral blood cells and detected disappearance of non-classical $CD14^{Low}CD16^{High}$ monocytes, accumulation of HLA-DR^{Low} classical monocytes (Human Leukocyte Antigen - DR isotype), and ***release of massive amounts of calprotectin (S100A8/S100A9) in severe cases***.





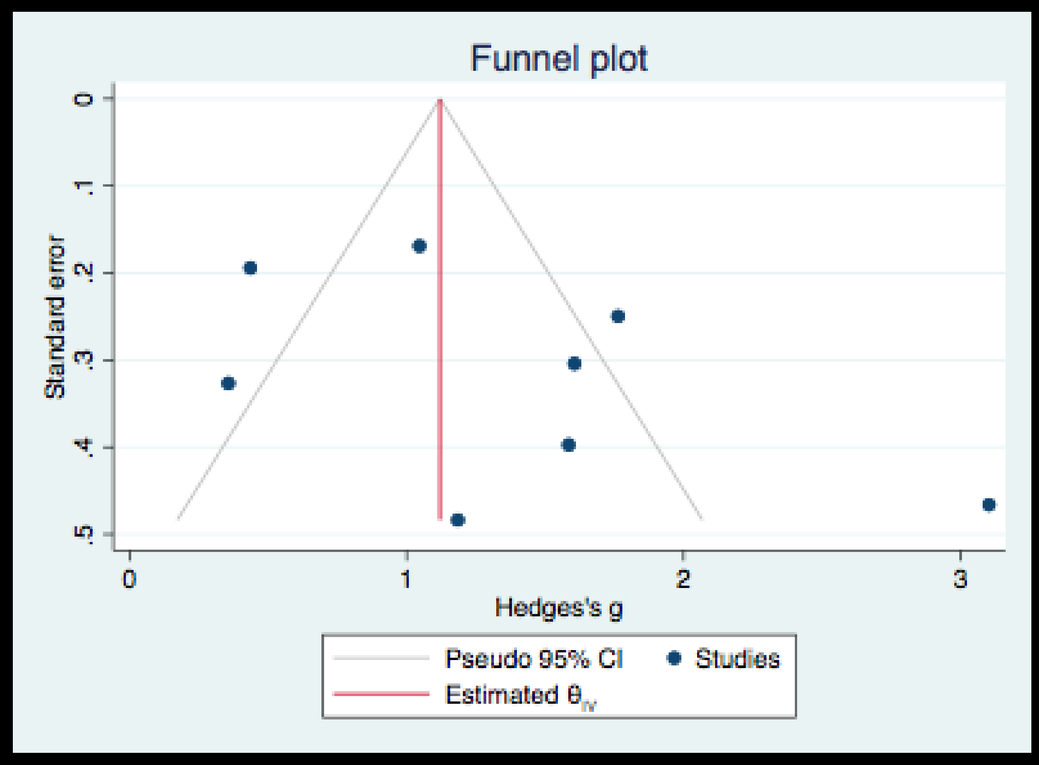
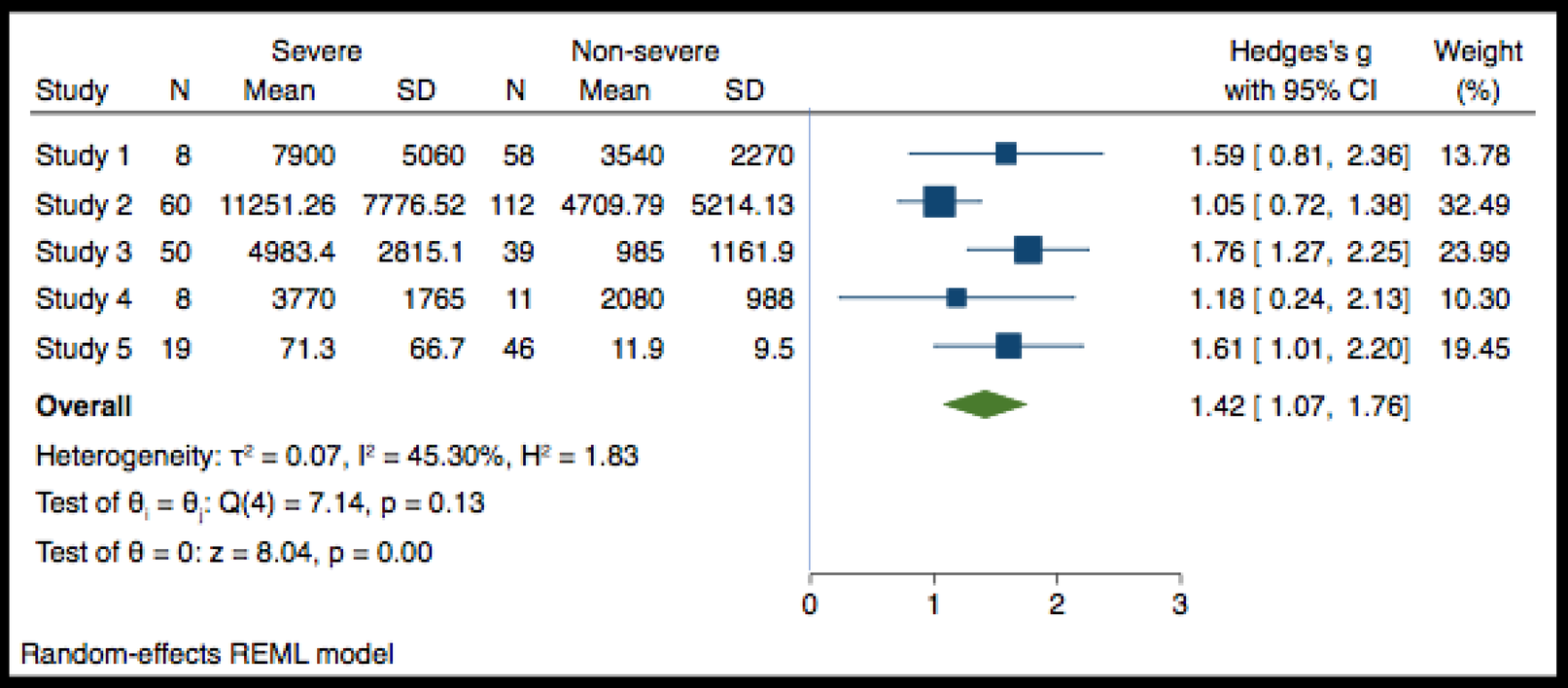


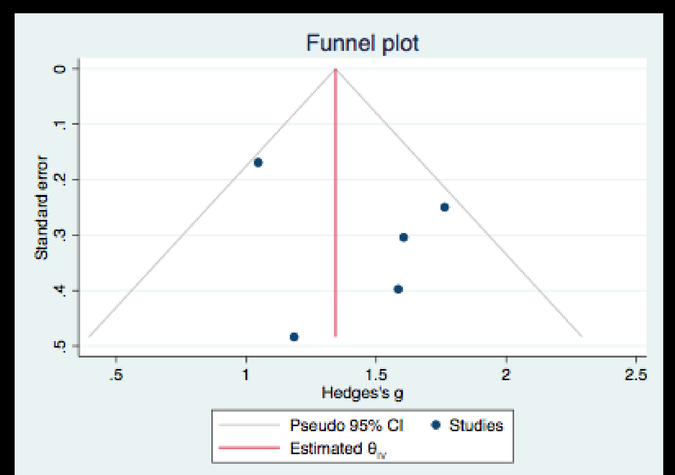
Figure 3: Meta-analysis (Total cohort).

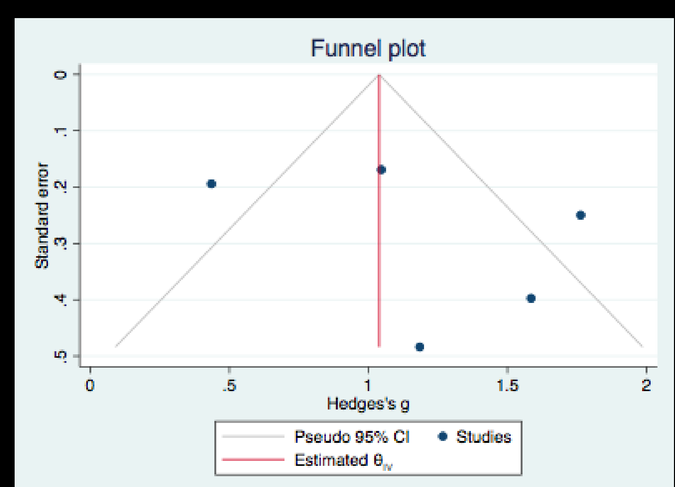
A. Forest plot (REM) and

B. Forest plot (FEM) comparing the mean differences in calprotectin level between severe and non-severe COVID-19. Studies 1-8 are respectively: Chen et al14; De Guadiana et al25; Shi et al23; Silvin et al12; Bauer et al24; Effenberger et al16; Ojetti et al26; Britton et al27.

C. Funnel plot showing some publication bias.







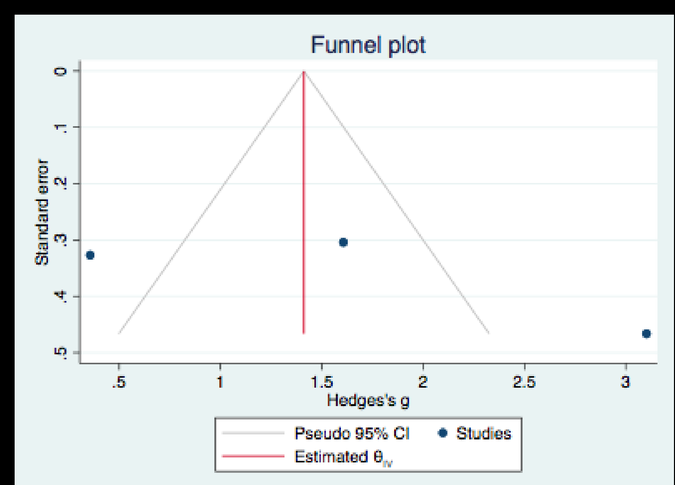
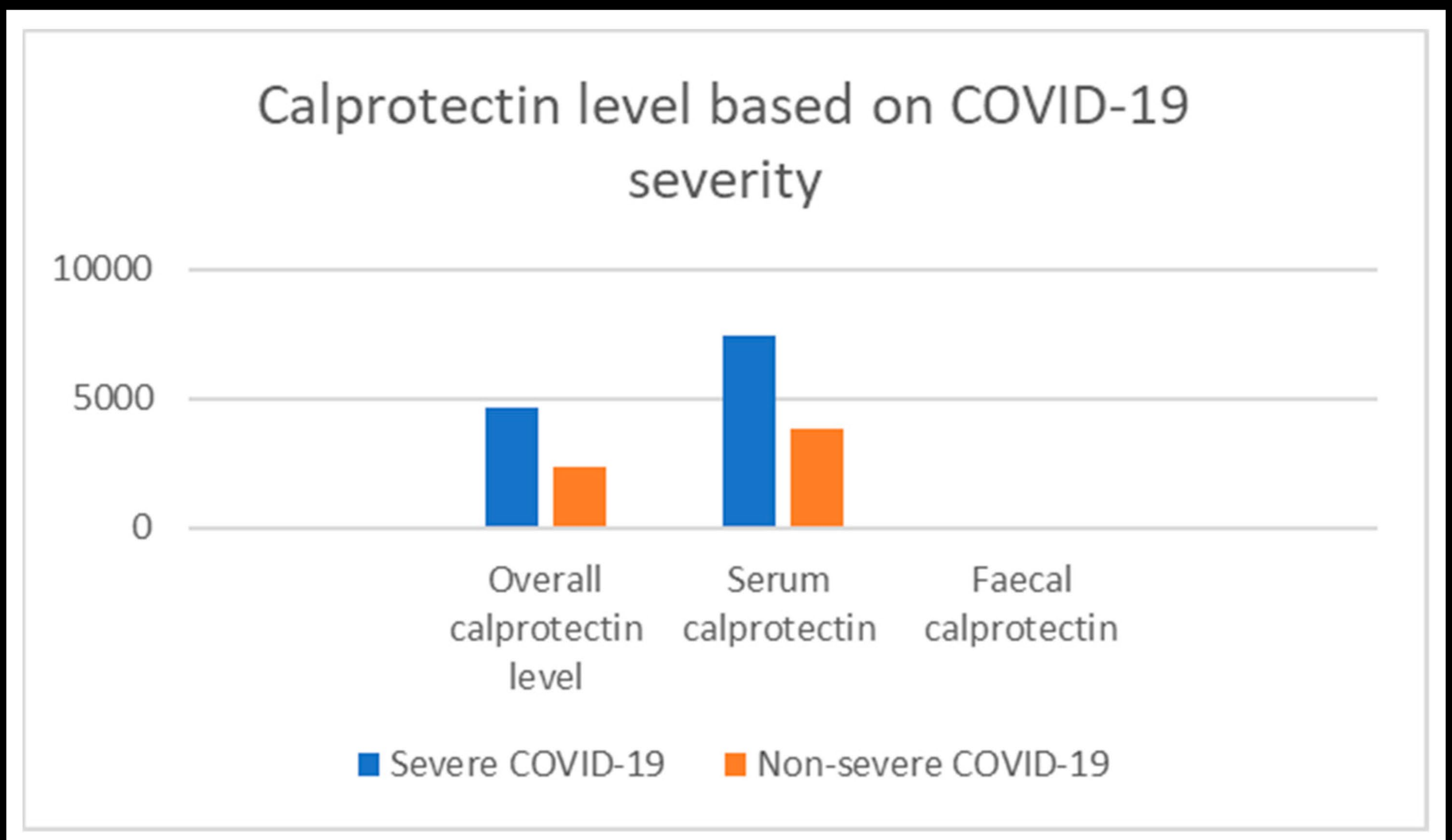


Figure 4: Meta-analysis (sensitivity analysis excluding three studies). A. Forest plot (REM) and B. Forest plot (FEM) comparing the mean differences in calprotectin level between severe and non-severe COVID-19. Studies 1-5 are respectively: De Guadiana et al[25]; Shi et al[23]; Silvin et al[12]; Bauer et al[24]; Ojetti et al[26]. C. Funnel plot (for the sensitivity analysis excluding three studies) shows no publication bias, an improvement from the total cohort funnel plot shown in figure 3c. D. Funnel plot (Subgroup analysis - Serum group) shows no publication bias. E. Funnel plot (Subgroup analysis - faecal group) shows some evidence of publication bias with much asymmetry.


Calprotectin level based on COVID-19 severity
10000
5000
0
Overall calprotectin level
Serum calprotectin
Faecal calprotectin
Severe COVID-19
Non-severe COVID-19