Association Of Non-Alcoholic Fatty Liver Disease And Metabolic-Associated Fatty Liver Disease With Mortality in COVID-19 Patients: A Systematic Review And Meta-Analysis

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Introduction

- Current literature shows that risk factors like obesity, diabetes, and hypertension, which are components of metabolic syndrome, lead to worse outcomes in COVID-19 patients

- Metabolic-associated fatty liver disease (MAFLD) and Non-alcoholic fatty liver disease (NAFLD) are on the rise and are currently estimated to affect around 25% of the US population

- We aimed to investigate the association between NAFLD/MAFLD and mortality outcomes among COVID-19 Patients

Methods

- Database: PubMed, Cochrane, Embase, Science Direct, and Web of Science

- Duration of literature: January 2019- to August 2022

- Inclusion Criteria: Observational studies or clinical trials that studied mortality outcomes in COVID-19 patients

- Studies that assessed NAFLD/MAFLD using lab assessment (FIB-4, APRI, FIBROSIS score, HSI index, etc.), non-invasive imaging (Elastography, Liver Ultrasound, CT scan, MR elastography, Liver stiffness measurement), or liver biopsy were included

- Meta-analysis performed using Rev Man software and heterogeneity assessed using the I^2 statistic. Mantel-Haenszel odds ratio was generated to describe the overall effect size using random effect models
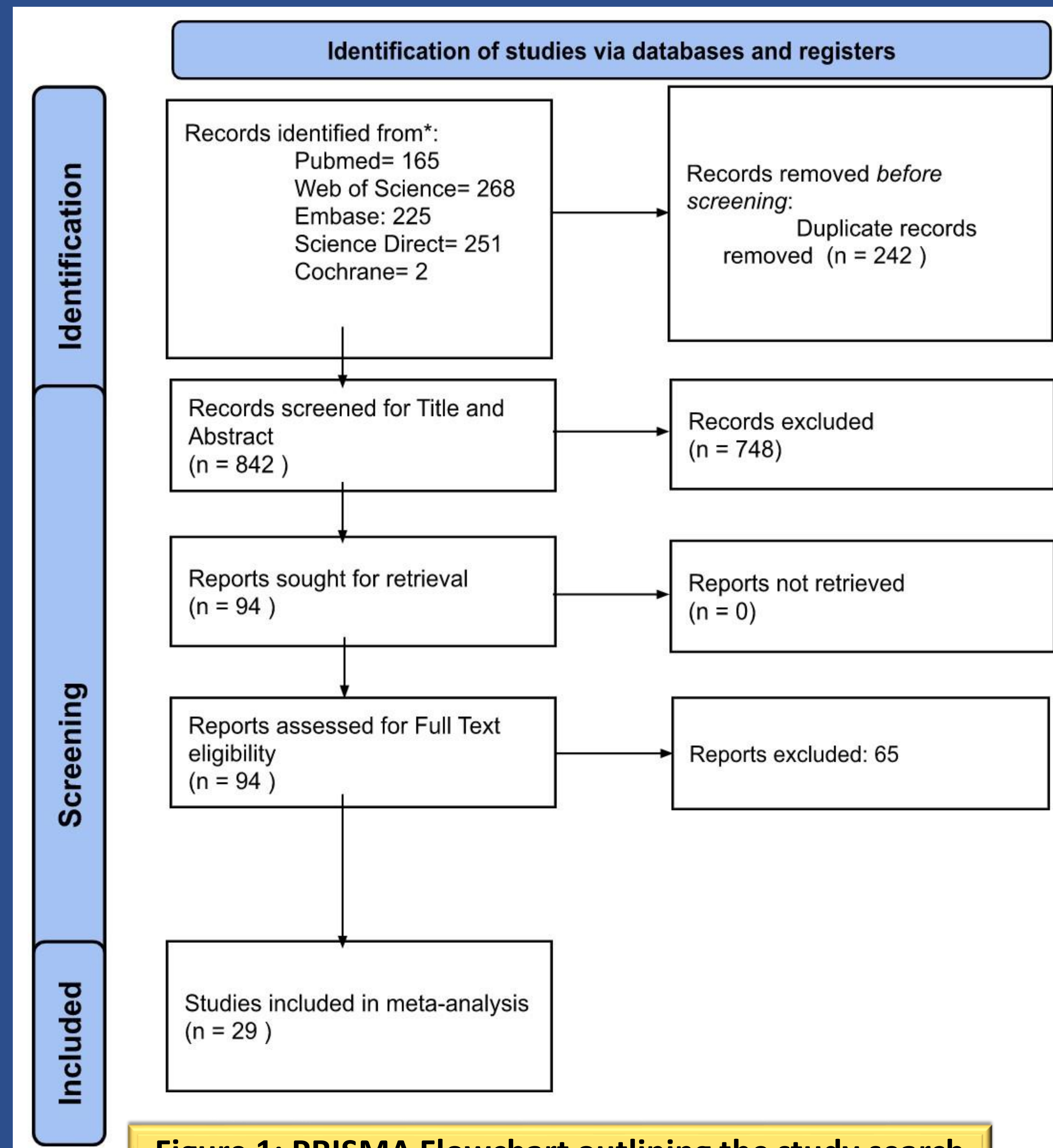

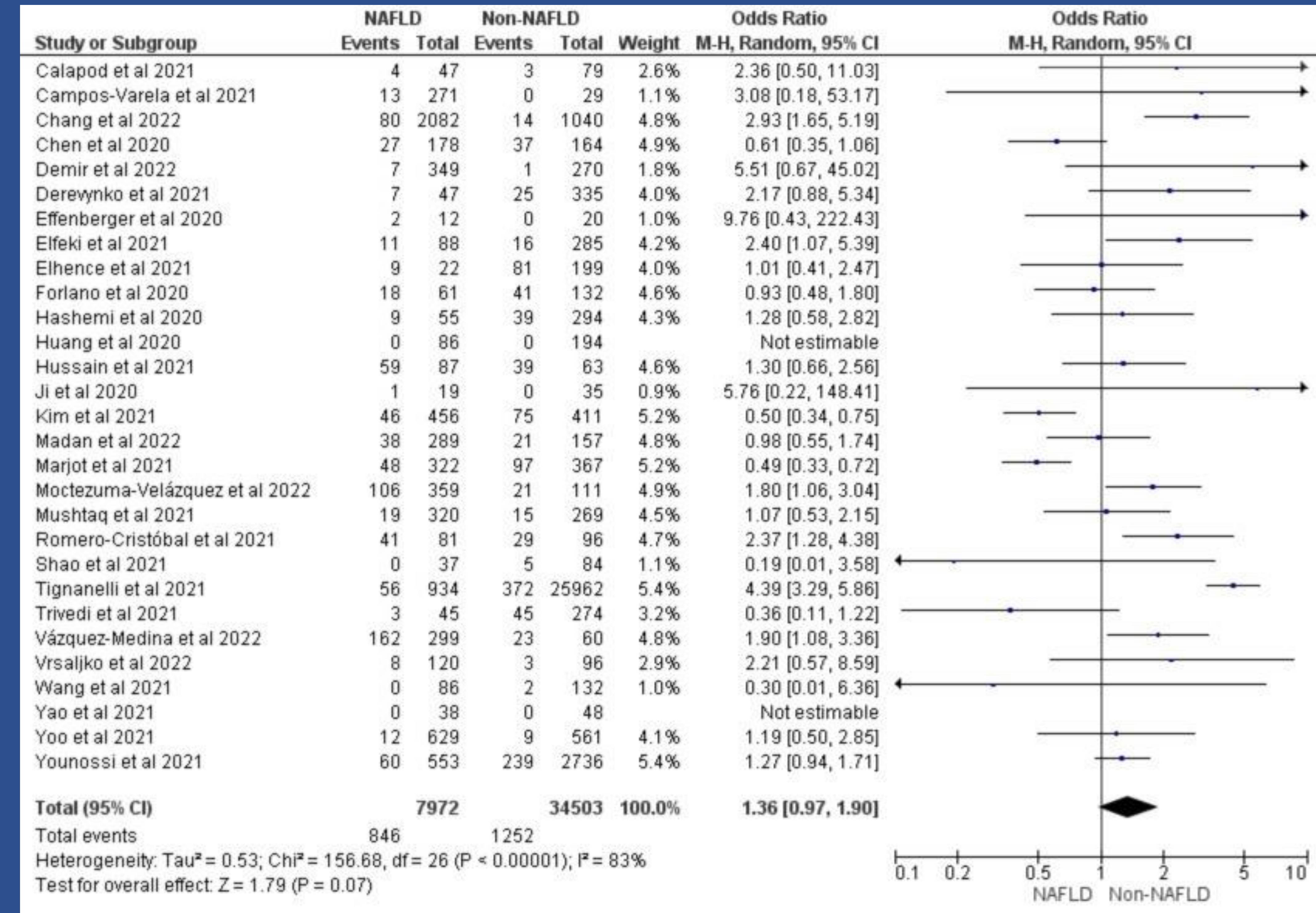Figure 1: PRISMA Flowchart outlining the study search

Figure 2: Forest Plot and meta-analysis of Mortality outcomes in COVID-19 with Fatty Liver disease

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Results

- Total studies included: 29

- Total of 42,475 patients from 29 studies were included in the qualitative analysis. A total of 2098 patients with COVID-19 died; 846 were in the NAFLD group and 1252 were in the non-NAFLD group

- The odds ratio was 1.36 for mortality, p=0.07 and a 95% Confidence interval (95% CI) of 0.97- 1.90, I^2= 83%. We did not observe an association between NAFLD/MAFLD and hospital mortality among COVID-19 patients

Conclusion

- Our meta-analysis suggests that the increased odds of mortality among COVID-19 patients with NAFLD, did not reach statistical significance

- A high level of heterogeneity among the studies needs to be considered for future studies