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Background: Acute pulmonary embolism (PE) has been recognized as a frequent complication of COVID-19 infection influencing the clinical course and outcomes of these patients.

Objectives: We performed a systematic review and meta-analysis to evaluate the mortality risk in COVID-19 Italian patients complicated by acute PE in the short-term period.

Methods: The study was performed in accordance with the Preferred Report Items for Systematic Reviews and Meta-analyses (PRISMA) guidelines. PubMed-MEDLINE and Scopus databases were systematically searched for articles, published in English language and enrolling Italian cohorts of COVID-19 patients from inception through October 20, 2021. Mortality risk data were pooled using the Mantel-Haenszel random effects models with odds ratio (OR) as the effect measure with 95% confidence interval (CI). Heterogeneity among studies was assessed using Higgins and Thomson I2 statistic

Results: Eight investigations enrolling 1.681 patients (mean age 64.9 years, 1.125 males) met the inclusion criteria and were considered for the analysis. A random-effect model showed that acute PE was presents in 3.1% (95% CI: 1.7 to 5.5%, I2: 80.7%) of COVID-19 Italian patients. Moreover, these subjects were at higher mortality risk compared to those without (OR: 1.76, 95% CI: 1.26-2.47, p=0.001, I2=0%) (Figure). Sensitivity analysis confirmed yielded results.

Conclusions: In Italian COVID-19 patients, acute PE was present in one patient out of four and significantly associated with a higher mortality risk in the short-term period. The identification of acute PE in these patients remains critical to promptly identify vulnerable populations who would require prioritization in treatment and prevention and close monitoring.

