

# Risk factors and laboratory test results associated with severe illness and mortality in covid-19 patients: A systematic review

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## Abstrak

Background: we aimed to systematically review all relevant studies related to the risk factors and laboratory test results associated with severe illness and mortality in COVID-19 patients. Methods: we utilised PubMed, Scopus, ProQuest, Wiley Online Library, ScienceDirect and MedRxiv to search for studies, with additional hand searched journals. We included systematic reviews/meta-analyses, cohort and case control studies of suspected and/or confirmed COVID-19 cases with severe illness and/or mortality as outcomes. We included laboratory test results and risk factors. We assessed risk of bias using ROBIS-I and Newcastle-Ottawa Scale assessment tool. Type of study, risk of bias, and precision of results determined evidence sufficiency. Results: of 26 records included, sufficient evidence suggested the association between age >60 years, hypertension, coronary heart disease, DM, serum LDH 250-500 U/L, LDH >500 U/L, and lymphopenia (lymphocyte count  $1.0 \times 10^9$  /L) and severe illness of COVID-19. CD3+CD8+ cell count 75 cell/l, D-dimer > 1 mg/L, AKI stage 2 and 3, proteinuria 1+, hematuria 1+, and peak serum creatinine > 13.26 mol/L are associated with mortality. Conclusion: age >60 years, hypertension, DM, and coronary heart disease are the risk factors for severe illness of COVID-19. Laboratory test results associated with severe illness are serum LDH 250-500 U/L, LDH >500 U/L, and lymphopenia, whereas test results associated with mortality are CD3+CD8+ cell count 75 cell/l, AKI stage 2 and 3, proteinuria 1+, hematuria 1+, D-dimer > 1 mg/L, peak serum creatinine > 13.26 mol/L.