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Incident diabetes within two years following SARS-CoV-2 infection: a population-based study of the Agency for Health Protection of Milan

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Strategies for population-level identification of Post-Acute Sequelae of COVID-19 through health administrative data

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Bando Cariplo - Networking and capacity building on PASC

PROGETTO
"The Post-Covid-19 Syndrome: network building and innovative management to address a new public health emergency"

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ABSTRACT

Background. Post-acute sequelae of SARS-CoV-2 infection (PASC), including persistent symptoms and acute and chronic diagnoses, have become a major research focus. Diabetes mellitus, beyond its established link to COVID-19 severity, is increasingly recognized as a potential long-term outcome. This study investigates the association between SARS-CoV-2 infection and incident diabetes at population level leveraging health administrative data from the Agency for Health Protection of Milan, where the epicenter of the pandemic in Italy took place.

Methods. This retrospective cohort study included adult residents without a history of diabetes who underwent SARS-CoV-2 testing between 1 March and 31 December 2020. Test-positive subjects were matched 1:1 to test-negative subjects using sex, age and testing week. The cohort was followed through 31 December 2021. Diabetes incidence was compared between the two groups, and in stratified analyses by sex and age, using weighted Cox models adjusting for chronic comorbidities, area-level deprivation, influenza and pneumococcal vaccination. Weights were calculated with the inverse probability weighting approach. Incidence of diabetes was evaluated in both groups. Effect estimates are presented as hazard ratios (HRs).

Results. Our final cohort included 248176 subjects (124026 test-negative, 124150 testpositive). Over a median follow-up time of 415 days, 657 negative (0.53%) and 739 (0.60%) positive individuals developed diabetes. Incidence among positive subjects was 572.82 per 100000 person-years (CI 531.52-614.12) and among negative subjects was 509.50 per 100000 person-years (CI 470.54 – 548.46). The overall HR was 1.13 (CI 1.02-1.25 In stratified analyses, this effect was prominent in women aged 41-60 years (HR 1.31, CI 1.02-1.68; AF 23.4%).

Conclusion. This study provides population-based evidence supporting an association between SARS-CoV-2 infection and new-onset diabetes. Findings contribute to understanding the long-term health impact of COVID-19 and may inform public health strategies for PASC prevention and health impact of COVID-19 and may inform public health strategies for PASC prevention and management.

Keywords
45 SARS-CoV-2, Diabetes, PASC, Long Covid, Epidemiology, Population cohort study