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## Potential Protective effect of COVID-19 Vaccines from New-Onset Autoimmune Diseases Following COVID-19 Infection: A Systematic Review

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**Abstract**

Although the effects of COVID-19 infection mainly present as respiratory illness, emerging evidence indicates immune dysregulation increasing the risk of autoimmune disease (AD) development. This systematic review aimed to establish the global prevalence of new-onset autoimmune diseases following COVID-19 infection and its association with vaccines. Utilizing the PICOS framework, 1,137 studies were identified from six databases and citation searching. The screening procedure removed 116 duplicates, 416 unrelated studies, 587 ineligible studies, and 10 studies with insufficient data following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) protocol. The findings of eight included studies can be synthesized: there is an increased risk of developing new-onset autoimmune diseases following COVID-19 infection, whereas rheumatoid arthritis, psoriasis, Sjögren's syndrome, systemic sclerosis, and systemic lupus erythematosus were the most globally prevalent ADs. All but one included study presented a compelling picture of the effectiveness of the COVID-19 vaccine in reducing the risk of developing various new-onset autoimmune diseases compared to the unvaccinated group. This systematic review showed that the new-onset ADs were increasingly prevalent in patients with recorded COVID-19 infection and a clinical presentation affecting organ-specific to systemic manifestations in children, adults, and across countries. Notably, the efficacy of COVID-19 vaccines extends even to the sequelae of the infection. It stands to reason that COVID-19 vaccines are protective in preventing disease outcomes. Individuals with symptoms indicative of COVID-19 infection should be tested for COVID-19 to establish baseline data, have access to immediate treatment, and prevent exacerbation of the infection. Individuals with lingering effects from COVID-19 infection should consult healthcare providers to access long-term care planning and prevent the development of new-onset autoimmune diseases. Healthcare governments may consider refining their existing COVID-19 policies and extending support to individuals with post-COVID infection.