Unraveling COVID-19: A Global Health Crisis and Ongoing Research

A B S T R A C T:

The COVID-19 pandemic, sparked by the novel severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), has triggered an unparalleled global health crisis with far-reaching consequences. SARS-CoV-2 primarily spreads through respiratory droplets, utilizing angiotensin-converting enzyme 2 (ACE2) receptors in the respiratory system for cellular entry and replication, underscoring the critical need for preventive measures. The emergence of worrisome mutations has led to the development of more transmissible variants, heightening the virus's potential impact. Diagnostic testing, including reverse-transcriptase polymerase chain reaction (RT-PCR), antigen detection, and serology, plays a pivotal role in identifying. COVID-19 diagnostic tests include the ABBOTT ID NOW™ COVID-19 test (95% sensitivity and 100% specificity), the COBAS® SARS-CoV-2 test (98.8% sensitivity and 99% specificity), the SOFIA® 2 SARS ANTIGEN FIA test (91.7% sensitivity and 100% specificity), the XPERT® XPRESS SARS-CoV-2 test (95.4% sensitivity and 97% specificity), and the ACCULA SARS-CoV-2 test(98% sensitivity and 100% specificity). While vaccines include the Pfizer-BioNTech vaccine(95% efficacy), Moderna vaccine (94.10% efficacy), Johnson & Johnson vaccine (66% efficacy),Oxford-AstraZeneca vaccine (76% efficacy), Sinovac vaccine (50.38% efficacy), Sinopharm vaccine (79% efficacy), Bharat Biotech (Covaxin) vaccine (81% efficacy), Sputnik V vaccine(91.60% efficacy), Novavax vaccine (96.4% efficacy), and Covovax vaccine (100% efficacy). The COVID-19 pandemic underscores the ongoing necessity for global cooperation among scientific and medical communities to understand this emerging pathogen, mitigate health impacts, and advance long-term solutions through continuous therapeutic and vaccine research.

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