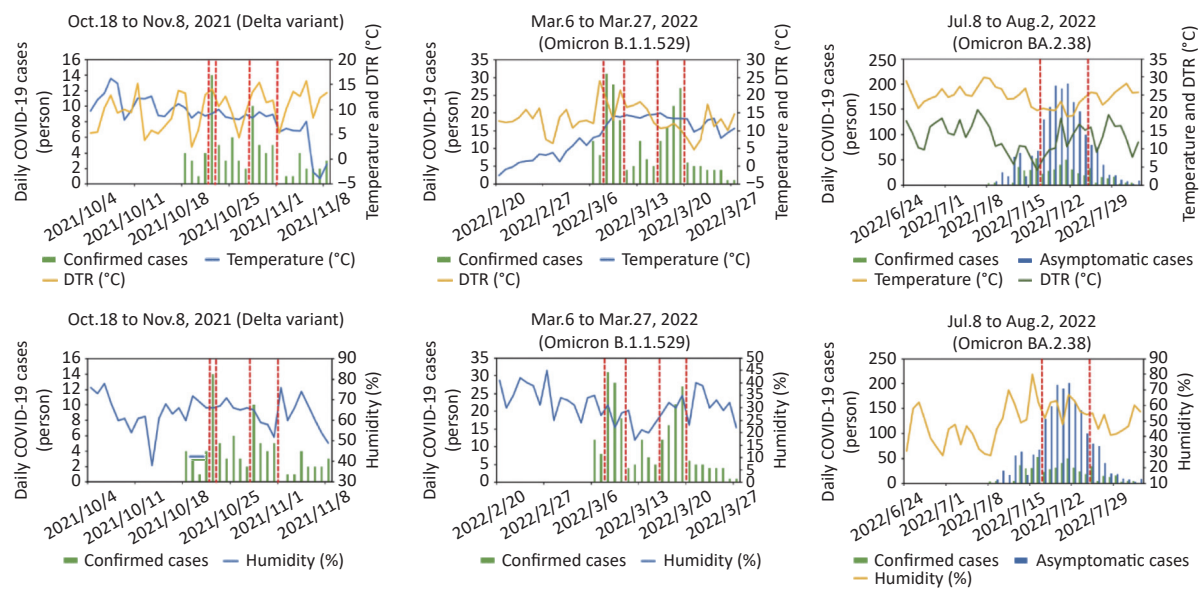




Supplementary Figure S1. Time series analysis of daily COVID-19 cases and meteorological elements during three COVID-19 pandemics in Lanzhou. The red dotted line emphasized the peak area for daily COVID-19 cases.

Supplementary Table S1. Model parameter selection and its significance in fitting exposure-response relationship using GAM model during three COVID-19 epidemics in Lanzhou

Time	Exposure-response relationship	Model parameters	P value
Oct. 18 to Nov. 8, 2021	Temperature and COVID-19 risk	s (time)	0.0109*
		s (temperature)	0.0352*
	Humidity and COVID-19 risk	s (time)	0.1348
		s (humidity, df = 3)	0.0311*
	DTR and COVID-19 risk	s (DTR)	0.0041**
	Temperature and COVID-19 risk	s (time)	0.0084**
Mar. 6 to Mar. 27, 2022	Temperature and COVID-19 risk	s (temperature)	0.0023**
		s (time)	<0.0001***
	Humidity and COVID-19 risk	s (humidity, df = 3)	0.0139*
		s (time)	0.0157*
	DTR and COVID-19 risk	s (DTR)	0.0157*
	Temperature and COVID-19 risk	s (temperature)	<0.0001***
Jul. 8 to Aug. 2, 2022 (confirmed)	Humidity and COVID-19 risk	s (humidity)	0.0133*
	DTR and COVID-19 risk	s (DTR)	<0.0001***
	Temperature and COVID-19 risk	s (temperature)	<0.0001***
Jul. 8 to Aug. 2, 2022 (asymptomatic)	Humidity and COVID-19 risk	s (humidity)	0.0142*
	DTR and COVID-19 risk	s (DTR)	<0.0001***

Note. *P value < 0.05; **P value < 0.01; ***P value < 0.001.