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Letter to the Editor

# COVID-19 vaccination and SARS-CoV-2 Omicron (B.1.1.529) variant: a light at the end of the tunnel?

Camilla Mattiuzzi<sup>1</sup>, Brandon M. Henry<sup>2,3</sup>, Giuseppe Lippi<sup>4,\*</sup><sup>1</sup>Service of Clinical Governance, Provincial Agency for Social and Sanitary Services, Trento, Italy<sup>2</sup>Clinical Laboratory, Division of Nephrology and Hypertension, Cincinnati Children's Hospital Medical Center, Cincinnati, Ohio, United States<sup>3</sup>Disease Intervention & Prevention and Population Health Programs, Texas Biomedical Research Institute, San Antonio, Texas, United States<sup>4</sup>Section of Clinical Biochemistry and School of Medicine, University of Verona, Italy

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## ABSTRACT

We retrieved data from the online database of the Italian Ministry of Health concerning the previous and ongoing waves of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) epidemic in Italy. We analyzed the prevalence of variants, the number of SARS-CoV-2 diagnoses, hospitalization, and intensive care unit (ICU) admissions for patients with coronavirus disease 2019 (COVID-19). We compared 2 similar days: January 12, in 2021 and 2022. Although the number of positive cases in 2022 was nearly fourfold higher compared with the same period in 2021, presumably owing to higher transmissibility of Omicron variant, a considerable decrease of COVID-19 related hospitalizations (-82%) and ICU admissions (-84%) could be observed in the more recent period, when the Omicron variant was largely prevalent and COVID-19 vaccination was widespread.

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To the Editor,

We read with interest the recent article of Abdullah et al., who concluded that a significantly lower severity of illness associated with the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) Omicron B.1.1.529 variant-driven epidemic wave had been observed in Tshwane, South Africa (Abdullah et al., 2021). This agrees with evidence recently published in other studies from South Africa, the United States, and the United Kingdom (Mahase, 2021), which also reported a similar suggestion of decreased pathogenicity associated with this new and highly mutated Omicron lineages (Lippi, Mattiuzzi and Henry, 2021).

To corroborate these preliminary findings, we retrieved data available in the online database of the Italian Ministry of Health concerning the previous and ongoing waves of the SARS-CoV-2 epidemic in Italy (Italian Ministry of Health, 2022). We analyzed the prevalence of variants, the number of SARS-CoV-2 diagnoses,

hospitalization, and intensive care unit (ICU) admissions for coronavirus disease 2019 (COVID-19). We compared 2 similar days: January 12, 2021, and January 12, 2022, and then analyzed with MedCalc (Version 20.015; MedCalc Software Ltd., Ostend, Belgium). Statistical significance was set at  $p < 0.05$ . The study was carried out in accordance with the Declaration of Helsinki, under terms of relevant local legislation. This research was based on publicly available data thus Ethical Committee approval was unnecessary.

As listed in Table 1, the total number of Italian citizens who tested positive for SARS-CoV-2 infection on January 12, 2021 (estimated prevalence of SARS-CoV-2 Alpha B.1.1.7 variant: 92%; vaccination rate: <0.1%) and January 12, 2022 (estimated prevalence of SARS-CoV-2 Omicron B.1.1.529 variant: >80%; vaccination rate: 86.6%) was 570,040 and 2,222,060, respectively. Although the number of positive cases in 2022 was nearly fourfold higher compared with the same period in 2021, presumably owing to higher transmissibility of Omicron lineages (Lippi, Mattiuzzi and Henry, 2021), a considerable decrease of COVID-19 related hospitalizations (-82%) and ICU admissions (-84%) could be observed in the more recent period, when the Omicron lineages were largely prevalent and COVID-19 vaccination was widespread (Table 1). Notably, the infection rate in January 2022 was 3,569 per 100,000 in unvaccinated people compared with 1,770 per 100,000 in vaccine recipients,

**Abbreviations:** SARS-CoV-2, Severe Acute Respiratory Syndrome Coronavirus 2; COVID-19, Coronavirus Disease 2019; ICU, Intensive Care Unit.

\* Corresponding author: Prof. Giuseppe Lippi, Section of Clinical Biochemistry, University Hospital of Verona, Piazzale L.A. Scuro, 10, 37134 Verona - Italy, Tel. 0039-045-8122970; Fax. 0039-045-8124308.

E-mail address: [giuseppe.lippi@univr.it](mailto:giuseppe.lippi@univr.it) (G. Lippi).

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**Table 1**

Number of SARS-CoV-2-positive Italian citizens and COVID-19-related hospitalization and intensive care unit (ICU) admissions during 2 different epidemiologic waves

Endpoint	January 12, 2022	January 12, 2021	Odds ratio (and 95% CI)
Total cases	2,222,060	570,040	-
Predominant variant	B.1.1.529 (Omicron; >80%)	B.1.1.7 (Alpha; 92%)	-
Vaccination coverage	86.6%	<0.1%	-
Hospitalizations	17,309 (0.78%)	23,712 (4.16%)	0.18 (95% CI: 0.18-0.18; p <0.001)
ICU admissions	1,669 (0.08%)	2,636 (0.46%)	0.16 (95% CI: 0.15-0.17; p <0.001)

95% CI = 95% confidence interval; OR =odds ratio.

thus translating into a cumulative vaccine efficiency against this endpoint of 52% (Odds ratio, 0.48; 95% CI, 0.46-0.51; p <0.001).

Reviewed together, these Italian data agrees with data reported in other countries, suggesting that the efficacy of vaccination combined with ostensibly lower severity of illness caused by the Omicron B.1.1.529 variant may substantially mitigate some of the pressure of COVID-19 on healthcare systems faced with a massive surge in cases also involving unvaccinated and immunodeficient populations.

#### Conflict of interest

The authors declare no conflict of interest.

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#### Authors' contribution

Study design: GL, CM, BMH; Data Collection: GL, CM; Data analysis: GL, BMH; Writing: GL, BMH

#### Ethical Approval

Unnecessary (electronic search on a freely available database).

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