



Factors Associated With SARS-CoV-2 Infection at a German Medical Congress During the Omicron Wave

Alaa Din Abdin, MD, MRSCed; Barbara C. Gärtner, PhD; Cristian Munteanu; Isabel Weinstein, MD; Birgit Mele; Philip Gass, MD; Berthold Seitz, PhD

Introduction

COVID-19 is caused by SARS-CoV-2, which is spread through close person-to-person contact.¹ In the early days of the COVID-19 pandemic, restricting public events was 1 of the first measures taken to prevent the transmission of SARS-CoV-2.¹ Accordingly, most medical societies suspended their academic meetings or moved them to a virtual platform.²

The 122nd Annual Congress of the German Society of Ophthalmology (DOG) was held in person in 2022 for the first time in 3 years. Many studies^{3,4} have investigated SARS-CoV-2 positivity rates following in-person academic conferences. However, compared with these studies, the DOG congress had a higher number of attendees and took place during the Omicron wave without mandatory safety measures. Therefore, the aim of this study was to investigate the association of this face-to-face DOG meeting with potential SARS-CoV-2 transmission.

Methods

This cross-sectional study did not require approval by an institutional review board because it was a descriptive noninterventive survey study ([Supplement 1](#)). The DOG congress was held from September 28 to October 2, 2022, in Berlin, Germany. Measures to limit exposure to SARS-CoV-2, such as self-testing, confirmed vaccination, and wearing masks, were not mandatory. An online survey was sent to participants after the congress on October 22, 2022 ([Supplement 1](#)). Participants provided informed consent as part of the survey. The main outcome was the rate of reported positive SARS-CoV-2 test results. Additionally, factors associated with SARS-CoV-2 infection were analyzed. See [Supplement 1](#) for more details on data analysis.

Results

Of the 4463 congress participants who attended in person, 1709 (38.2%) completed the survey. Of all valid respondents (1355 respondents), 109 (8.0%) reported a positive SARS-CoV-2 test result ([Figure](#)). The survey was conducted 3 weeks after the conclusion of the meeting and the majority of the SARS-CoV-2 tests (690 tests [88.0%]) were carried out within 1 week after the congress (median, 3 days).

Nearly all participants were vaccinated (1342 participants [97.8%]), and vaccination status was not associated with SARS-CoV-2 infection during the congress. However, prior infection was significantly associated with testing negative for SARS-CoV-2 infection, and private accommodation in Berlin was associated with a higher infection rate compared with hotel accommodation. The mode of transportation and wearing masks during travel or during the congress were not associated with infection rate ([Table](#)).

+ Supplemental content

Author affiliations and article information are listed at the end of this article.

Discussion

In this cross-sectional study, 8.0% of the participants surveyed reported a positive SARS-CoV-2 test after the congress. This rate seems high compared with other studies where the rate of SARS-CoV-2 positivity after a several medical meetings ranged from 0.0% to 1.7%.^{3,4} This higher rate could be because the congress took place during the Omicron surge, which was locally and temporally different compared with the variants in other studies such as Silver et al.⁴ The Omicron variant had a much higher transmission rate and lower vaccine efficacy due to immune escape of the new subtype.

Figure. General Distribution of Participants (Surveyed and Tested)

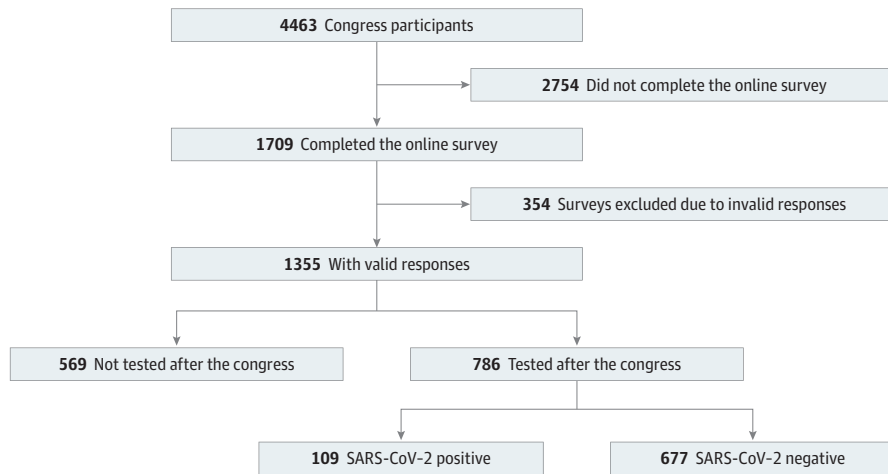


Table. Factors Associated With SARS-CoV-2 Positivity After the German Society of Ophthalmology Congress^a

Factor	All survey respondents, No. (%) (N = 1355)	Tested participants, No. (%) (N = 786)		P value
		SARS-CoV-2 positive (n = 109)	SARS-CoV-2 negative (n = 677)	
Sex				
Male	620 (45.8)	48 (45.9)	312 (46.1)	.85
Female	710 (52.4)	57 (52.3)	354 (52.3)	
Age, mean (SD), y	44.9 (12.0)	45.2 (12.0)	44.6 (12.0)	.97
Duration of participation in congress, mean (SD), h	20.3 (10.8)	21.6 (10.5)	20.5 (10.7)	.88
Mode of transportation				
Airplane	188 (14.0)	5 (4.6)	67 (9.9)	.47
Car	364 (27.0)	25 (32.1)	195 (28.8)	
Train	715 (52.5)	63 (57.8)	374 (55.2)	
Wearing mask during travel				
Airplane	138 (73.4)	5 (100.0)	59 (92.9)	.17
Car	3 (2.4)	0	2 (1.0)	
Train	705 (98.6)	61 (96.8)	371 (99.1)	
Wearing mask during congress	296 (21.7)	21 (19.3)	166 (24.5)	.14
Accommodation				
Hotel	963 (71.1)	75 (68.8)	476 (70.3)	.01
Apartment	203 (15.0)	13 (11.9)	113 (13.7)	
Home	82 (6.0)	13 (11.9)	29 (4.3)	
History of COVID-19 vaccination (at least 2 doses)	1342 (97.8)	109 (100.0)	666 (98.3)	.26
History of proven COVID-19 infection	808 (59.6)	19 (17.4)	423 (62.5)	<.001

^a Distribution of participants in relation to the analyzed potential factors associated with SARS-CoV-2 positivity.

The unique characteristics of Omicron and the lack of mandatory protective measures for the participants may have made our study more comparable to the current COVID-19 landscape.

This study showed that a history of previously proven SARS-CoV-2 infection was significantly associated with a decrease in SARS-CoV-2 infection rate. These findings are in line with other studies.⁵ Although SARS-CoV-2 rates in Berlin were relatively low at the time of the congress (an incidence of 288.4 per 100 000 inhabitants per week⁶), the percentage of participants staying in private accommodations in Berlin was significantly higher among SARS-CoV-2-positive participants. This finding could be related to being in close contact with family and friends compared with participants who stayed in a hotel and were relatively isolated. Some limitations of this study were that attendees who were positive but asymptomatic and did not test could not be included. Additionally, the response rate might have been biased toward a higher rate of positive tests and the type of mask was also not specified (ie, surgical mask vs N95 or FFP2-3).

In summary, 8.0% of the participants reported a positive test for SARS-CoV-2. Although mass gatherings such as a large congress are associated with SARS-CoV-2 infection,² private accommodation with families and friends was the primary associative factor in this study. A history of proven SARS-CoV-2 infection could be considered to be a protective factor.

ARTICLE INFORMATION

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Corresponding Author: Alaa Din Abdin, MD, MRSCed, Department of Ophthalmology, Saarland University Medical Center UKS, Kirrberger Strasse 100, Bldg 22, 66421 Homburg/Saar, Germany (alaadin.abdin@uks.eu).

Author Affiliations: Department of Ophthalmology, Saarland University Medical Center UKS, Homburg/Saar, Germany (Abdin, Munteanu, Weinstein, Seitz); Department of Medical Microbiology and Hygiene, Saarland University Medical Center UKS, Homburg/Saar, Germany (Gärtner); Deutsche Ophthalmologische Gesellschaft, Munich, Germany (Mele, Gass).

Author Contributions: Dr Abdin had full access to all of the data in the study and takes responsibility for the integrity of the data and the accuracy of the data analysis.

Concept and design: Abdin, Gärtner, Weinstein, Gass, Seitz.

Acquisition, analysis, or interpretation of data: Abdin, Munteanu, Mele, Seitz.

Drafting of the manuscript: Abdin.

Critical revision of the manuscript for important intellectual content: All authors.

Statistical analysis: Munteanu, Mele.

Administrative, technical, or material support: Abdin, Weinstein, Mele.

Supervision: Gärtner, Gass, Seitz.

Conflict of Interest Disclosures: Dr Gärtner reported receiving personal fees and honoraria for serving on advisory boards with Pfizer, Moderna, Sanofia, Seqirus, and GlaxoSmithKline outside the submitted work. No other disclosures were reported.

Data Sharing Statement: See [Supplement 2](#).

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SUPPLEMENT 1.

eMethods. Data Analysis and Survey: COVID-19 Incidence After a Major Congress

SUPPLEMENT 2.

Data Sharing Statement