versorgungsatlas.de

# Factors influencing SARS-CoV-2 antibody prevalence among healthcare professionals in medical practices – COVID-PraxImmun study in Thuringia, Germany, 2020-2021

Jörg Bätzing[1] • Joachim Heuer[1] • Urs Dieter Kuhn[2] • Anke Möckel[2] • Florian Wolf[3] • Jutta Bleidorn[3] • Thomas Schröter[2]

[1] Central Research Institute for Ambulatory Health Care in the Federal Republic of Germany, Berlin, Germany
[2] Kassenärztliche Vereinigung Thüringen (KVT), Weimar
[3] University Hospital Jena, Institute of General Practice and Family Medicine, Friedrich Schiller University Jena

**DOI: 10.20364/VA-23.08**

## Abstract

### Background

In the early course of the SARS-CoV-2 pandemic at the beginning of 2020, it quickly became apparent that there was a significantly higher risk of infection and clinical symptoms for medical professionals than for the general population. In Germany, the effective protection of medical staff was given a central role in the fight against the pandemic early on. With the availability of antibody tests for the detection of SARS-CoV-2, including rapid tests, the Association of Statutory Health Insurance Physicians (ASHIP) of Thuringia (KVT), one of the 16 federal countries and situated in the middle-eastern part of Germany, decided to conduct a cohort study with the aim to systematically and comprehensively examine the immune status among SHI physicians and other medical professions of the outpatient sector in Thuringian SHI physicians practices over time.

### Methods

The practice questionnaires available online for the heads of the decentralized study centers and the personal questionnaires intended for the individual participants included structural data on the practice and on the protective measures implemented there, on the demographic data of the participants, on rapid and confirmation test results, on the professional background, on professional and private exposure to SARS-CoV-2, on previous illnesses and risks, on the type of symptoms in the event of a SARS-CoV-2 infection or COVID-19 disease, as well as data on vaccinations against COVID-19 that have been carried out. The latter was introduced in the survey periods C and D from February 2021 onwards. The questionnaire data are presented descriptively here. In addition, risk analyzes were carried out based on selected potential risk factors for positive SARS-CoV-2 antibody lab results of the study participants. Two professional groups were evaluated, namely doctors, psychotherapists and dentists (professional group 1, n=1,114) or non-medical practice staff with direct patient contact (professional group 2, n=2,514).

Corresponding author: Joachim Heuer
Central Research Institute of Ambulatory Health Care in Germany (Zi)
Salzufer 8 – 10587 Berlin – Tel. +49 (30) 220056112 – E-Mail: jheuer@zi.de

## Results

Outpatient medical care centers (in German *Medizinische Versorgungszentren*, MVZ) with 11.7% vs. 4.3% and group practices (in German *Gemeinschaftspraxen* and *Praxisgemeinschaften*) with 21.0% vs. 13.8% were represented above average compared with individual practices and the respective known health service shares within the KVT. In the early phase of the COVID-19 pandemic (March to July 2020), SARS-CoV-2 swabs (PCR tests) were carried out in half of the participating practices (49.9%), around 28% of these practices had SARS-CoV-2 positive laboratory results, but 53.7% of the practices were not yet treating any patients with confirmed SARS-CoV-2 infection. Over 90% of the participating practices introduced general protective measures such as notices or information material, increased surface disinfection and/or regulation of the number of patients, over 75% protective barriers and more than 60% distance markings, referral of suspected cases to test sites or work incapacity certificates for patients with infections by phone. Depending on clinical and epidemiological conditions, individual protective measures were used with varying frequency, most frequently mouth and nose protection (over 80%). Age and occupational exposures such as e. g. the workplace inside and outside the practice could not be identified as risks for the laboratory finding of SARS-CoV-2 antibodies. Only close physical contact with people with proven SARS-CoV-2 infection (regardless of whether professional or private contact) was found in both occupational groups in univariate analysis and multivariate regression analysis as a significant risk factor for positive antibody detection. In the multivariate analysis, occupational group 1 had a higher risk with an Odds Ratio (OR) of 5.571 ($p<0.001$; 95% CI[2.214; 14.017] than occupational group 2 with an OR of 2.255 ($p=0.004$; 95% CI[1.290;3.945]. General practitioners also had a higher risk than specialized physicians, which at least in the subpopulation of participants in all four survey times was weakly significant with an OR of 2.083 (95% CI[1.100;3.947].

## Discussion

The evaluation of the data from the practice questionnaire allowed to assess from the point of view of the outpatient care sector in the state of Thuringia existing possible transmission risks with SARS-CoV-2, especially during the early phase of the COVID-19 pandemic in spring and early summer 2020. In addition, the implementation of general and individual protective measures to prevent the transmission of SARS-CoV-2 in the practices war evaluated. The extent of the lack of important protective materials at the beginning of the pandemic, which affected, among other things, more than 80% of the practices and in particular, mouth and nose protection and FSP masks, is presented from the practitioners' point of view. In contrast to some national and international studies available to date, no statistically reliable correlation between occupational exposure and SARS-CoV-2-AK prevalence could be found for either of the two outpatient professional groups. Only for close contact with people with a confirmed SARS-CoV-2 infection a significant correlation was seen for both occupational groups in a univariate analysis and in a multivariate regression model. The risk calculated as OR based on multivariate regression was 5.571 in occupational group 1, more than twice as high as in occupational group 2 with 2.255. However, with an OR of 2.083, there was a slightly higher risk for general practitioners than for specialists, which also indicates the possible occupational exposure.

## Limitations

An important limitation is the decline in the number of participants over the course of the four survey periods. Reasons for non-participation or incomplete participation were not recorded - this was also not intended by the study design. The sample is a full census in all care facilities in Thuringia. The participation rate was around 30%. The composition of the SHI-physician participants (occupational group 1) does not completely match the composition of physicians in ASHIP of Thuringia regarding the characteristics age, sex, and medical specification, so that a selection bias due to non-representative participation cannot be completely ruled out. In addition, the online questionnaires applied are self-reported by the participants and cannot be validated during the data collection process, so that particularly a cognitive bias ("cognitive illusions") cannot be completely ruled out.


## Keywords

Antibody test, cohort study COVID-19, COVID-PraxImmun, ELISA, exposure, Germany, medical practices, medical professionals, outpatient care, risk analysis, rapid test, SARS-CoV-2, serology, serostatus, SHI- physicians, Thuringia

## Citation

Bätzing J, Heuer J, Kuhn UD, Möckel A, Wolf F, Bleidorn J, Schröter T. Factors influencing SARS-CoV-2 antibody prevalence among healthcare professionals in medical practices – COVID-PraxImmun study in Thuringia, Germany, 2020-2021. Versorgungsatlas-Report No. 23/08. Berlin 2023. URL: https://doi.org/10.20364/VA-23.08