

LETTER TO THE EDITOR
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Anti-SARS-CoV-2 IgG seroprevalence study among blood donors in the Republic of Srpska: a 30-day survey

Studija seroprevalencije anti-SARS-CoV-2 IgG kod davalaca krvi u Republici Srpskoj: 30-dnevno ispitivanje

To the Editor:

In most cases, individuals with the COVID-19 infection have few or no symptoms and represent a significant source of transmission as well as a challenge for prevention of the spread of the infection. The key elements for understanding total prevalence and epidemic significance of this disease are assessment of prevalence and infectiousness of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) ¹. Determination of the prevalence of SARS-CoV-2 in the population of blood donors might enable the monitoring of the virus transmission among healthy people, as well as the implementation of transmission-reducing strategies, especially in the absence of global or nationwide seroprevalence surveys ²⁻³.

Between June 17th and July 16th, 2020, at the Transfusion Medicine Institute of the Republic of Srpska (Bosnia and Herzegovina), a total of 807 blood samples from apparently healthy blood donors, aged 18–64, were tested for the first time for the presence of anti-SARS-CoV-2 IgG antibodies. A two-step sandwich enzyme immunoassay with a final fluorescence detection (ELFA) was used. It is the assay principle for VIDAS SARS-CoV-2 IgG, produced by Biorieux. All of the steps are performed automatically by the instrument and the intensity of the fluorescence is proportional to the level of antibodies in the tested sample. A test values are acquired as the results that are automatically calculated at the end of the assay by the instrument according to the S1 standard, stored in memory.

The results showed that a total of 22 (2.7%) blood donors were positive for the presence of anti-SARS-CoV-2 IgG antibodies. The Fisher's exact test determined there were no statistically significant differences in the number of the blood donors with anti-SARS-CoV-2 IgG antibodies regarding gender ($p = 0.421$), ABO blood groups ($p = 0.538$), and Rhesus blood groups ($p = 0.781$) (Table 1). What is clearly shown by the chi-squared test is that there are statistically

significant differences in the number of donors with anti-SARS-CoV-2 antibodies and different age groups ($\chi^2 = 9.676$, $df = 2$, $p = 0.008$). Anti-SARS-CoV-2 seroprevalence was significantly higher in blood donors aged 18–30 (5.1%, 15/296) compared with those aged 31–50 (1.4%, 6/427) ($p = 0.017$) (Table 1).

Table 1

Anti-SARS-CoV-2 IgG seroprevalence among blood donors in the Republic of Srpska according to gender, age, ABO blood types and Rhesus (Rh) blood groups

Variables	No. positive/No. tested (%)	p -value*
Gender		
male	16/643 (2.5)	0.421
female	6/164 (3.7)	
ABO blood type		
A	9/332 (2.7)	0.538
B	2/142 (1.4)	
O	8/271 (3)	
AB	3/62 (4.8)	
Rh blood groups		
positive	19/660 (3)	0.781
negative	3/147 (2)	
Age (years)		
18–30	15/296 (5.1)	0.008
31–50	6/427 (1.4)	
51–65	1/84 (1.2)	

*A probability level of $p < 0.05$ was considered to indicate statistical significance. Frequencies were estimated by direct counting. Fisher's exact test or chi-squared test, as appropriate, were used to evaluate the differences between SARS-CoV-2-positive and SARS-CoV-2-negative blood donors with respect to different characteristics.

The seroprevalence of antibodies to SARS-CoV-2 among blood donors in the state of Rio de Janeiro, Brazil, collected on 2,857 blood donors from April 14th to April 27th, 2020 was 4.0% [95% confidence interval (CI): 3.3–

4.7%]⁴. However, this estimate is higher than 1.9% of seroconducted in Denmark from April 6th to May 3rd, 2020⁵. German authors found anti-SARS-CoV-2 IgG antibodies in 3,186 regular blood donors in three German federal states between March 9th and June 3rd, 2020. The overall seroprevalence of IgG was 0.91%, ranging from 0.94% in North Rhine-Westphalia to 1.22% in Lower-Saxony and 0.66% in the federal state of Hesse⁶. The overall seroprevalence of SARS-CoV-2 antibodies in Timis County, Romania, among 2,115 blood donors was 1.51% (32/2115; 95% CI: 1.07%-2.13%)⁷. The reason for the difference in seroprevalence of anti-SARS-CoV-2 antibodies among blood donors in different countries is explained by various levels of health infrastructure in each country, implementation of different asymptomatic vectors of infection and its most significant reservoir. The social habits and behavior of this part of the population present a significant epidemiological risk for the transmission and the speed of spread of coronavirus disease 2019 (COVID-19). In addition, Olariu et al.⁷ observed higher infection rates in individuals over 60, together with higher infection rates in individuals under 30. Increased susceptibility of older individuals to SARS-CoV-2 infection is explained by changes in many cellular and molecular elements of both the innate and adaptive immune systems related to age, leaving older adults particularly prone to SARS-CoV-2⁹.

Our results regarding the anti-SARS-CoV-2 IgG antibodies frequency in asymptomatic blood donors, obtained at the Institute for Transfusion Medicine of Republic of Srpska, are preliminary. For a detailed analysis which could be useful for epidemiological studies, we need more information concerning a larger number of investigated blood donors, correlated with their gender, age groups, education level, place of residence, and donation site. Despite the lack of all these variables and the age limitation for blood donation (18 to 65 years), our results show that the population of healthy

prevalence in a large survey of 20,640 blood donors conmeasures for epidemic prevention and control, variability of method sensitivity and specificity for the detection of anti-SARS CoV-2 antibodies, and different times when the studies were conducted^{7,8}.

Our results are in accordance with previous reports showing that gender, ABO, and Rhesus blood groups are not associated with SARS-CoV-2 infection^{5,6}. However, anti-SARS-CoV-2 seroprevalence was significantly higher in our blood donors aged 18-30 compared to older age groups. This observation is in accordance with published findings by other authors, who observed infection rates in individuals under the age of 30^{4,7}. This information is of particular importance because it confirms that young people are the dominant blood donors in the Republic of Srpska has a certain level of herd immunity, particularly in younger persons.

Conflict of interest

The authors of this paper declare no conflicts of interest, including financial interests, relationships, and/or affiliations relevant to the subject matter or materials included.

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