Seroprevalence of anti-SARS-CoV-2 IgG among adolescents at military fitness-for-duty evaluation

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The potential of SARS-CoV-2 to spread is limited by herd immunity, which provides an indirect protection to susceptible subjects.[1] Although the seroprevalence against SARS-CoV-2 in the general population has been widely investigated,[1] no data are available on individuals before starting the military service. These subjects, who will spend together most of the military service, are at risk of infection outbreaks. We undertook a prospective cross-sectional study to investigate the prevalence of subjects with anti-SARS-CoV-2 IgG (and their history in the previous months) at military fitness-for-duty evaluation.

In Switzerland, male citizens 18–19 years of age undergo a medical screening and a status of fit or unfit for military service is assigned.[2 3] Women willing to be part of the Army also undergo such a medical evaluation. We invited to participate in this study all adolescents undergoing this evaluation in Southern Switzerland from July to December 2020. After informed consent, subjects filled in a structured questionnaire about their history from February 2020. Finally, blood was collected to identify IgG against spike protein subunit 1 of SARS-CoV-2 (Euroimmun Medizinische Labordiagnostika, Lübeck, Germany).[1] The cut-off value for positivity was >1.1.[1] Data are presented as absolute number (and percentage). Fisher's test was used to compare subjects with and without symptoms possibly associated with SARS-CoV-2 infection. We assumed as significant a p value <0.05.

We enrolled 301 (286 men and 15 women) out of 900 subjects. Only 10 (3.3%) male subjects tested positive for IgG against SARS-CoV-2. Table 1 reports the history of the enrolled subjects. About 60% of the subjects presented at least one symptom possibly associated with a SARS-CoV-2 infection. History of hyposmia, asthenia and muscle ache was more common among subjects with positive IgG against SARS-CoV-2.

To the best of our knowledge, this is the first study to investigate the seroprevalence of IgG against SARS-CoV-2 in subjects just before the start of the military service. The majority of these subjects did not present IgG against SARS-CoV-2. Previous data showed that the seroprevalence of IgG against SARS-CoV-2 among the general population in Switzerland was about 8% between April and May 2020.[1] Despite not being considered among priority groups for vaccination due to their young age, future conscripts have a significant potential to transmit SARS-CoV-2 infection.[4] Taken together, these data suggest that vaccination campaigns should consider conscripts who might be at high risk of SARS-CoV-2 during military service.[5] However, we did not evaluate the persistence of IgG, and further serological markers such as IgA or IgM were not assessed.

This study points out that a very low percentage of conscripts present with IgG against SAS-CoV-2 in Southern Switzerland. Future interventions should be addressed to prevent the risk of SARS-CoV-2 spread among conscripts.

In conclusion, we found that only a very low percentage of adolescents at military fitness-for-duty evaluation in Southern Switzerland presented with IgG against SAS-CoV-2. Future interventions should be addressed to prevent the risk of SARS-CoV-2 spread among these subjects.

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Table 1 Demographic data, detection of SARS-CoV-2 IgG and clinical history from February 2020 of Swiss adolescents (18–19 years of age) at military fitness-for-duty evaluation

	All	IgG-positive	IgG-negative	P value
n	301	10	291	
Gender, male	286 (95)	10 (100)	281 (97)	
Clinical history				
Upper respiratory symptoms	151 (50)	7 (70)	144 (49)	NS
Lower respiratory symptoms	9 (3.0)	1 (10)	8 (2.7)	NS
Hyposmia	23 (7.6)	3 (30)	20 (6.9)	<0.05
Diarrhoea	66 (22)	4 (40)	62 (21)	NS
Fever	87 (29)	5 (50)	82 (28)	NS
Asthenia	80 (27)	6 (60)	74 (25)	<0.05
Muscle ache	41 (14)	5 (50)	36 (12)	<0.01
None of the above	121 (40)	2 (20)	119 (41)	NS

Data are presented as absolute frequency (and percentage).
NS, not significant.

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