

Incidence of COVID-19 in Children and Young People Who Play Federated Football

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Abstract

Aim: To determine the incidence of SARS-CoV-2 (severe acute respiratory syndrome coronavirus 2) infection in children and young people who play federated football.

Methods: Prospective study, from October 2020 to January 2021, in players aged 4 to 19 years from federated football clubs in Galicia, Spain (N = 23,845). Outbreaks and cases of SARS-CoV-2 infection were recorded. The cumulative incidence was compared with the incidence registered in Galicia in the same age range.

Results: The cumulative incidence was 29.8 cases per 10,000 licenses in 4 months, lower than the incidence registered in the general population for all ages and both sexes (283.7 per 10,000 inhabitants; rate ratio = 9.5). It was higher in January (40.7 per 10,000), coinciding with the population peak. More cases were registered in futsal (42.9 vs 27.5 per 10,000) and competitions with periodic screenings (127.4 vs 9.1 per 10,000). There were 2 outbreaks in 2389 teams (0.08%).

Conclusion: The results support the safety of football practice in children and young people with prevention protocols.

Keywords: SARS-CoV-2, COVID-19, football, exercise, disease transmission, infectious, risk

The disease caused by SARS-CoV-2 (severe acute respiratory syndrome coronavirus 2, or COVID-19) was first identified in China in December 2019.⁴ It was declared a pandemic on March 11, 2020,^{5,15} with cases recorded in 213 countries.⁵

To control its spread, in March a “health emergency situation” was declared in Galicia¹⁶ and a “state of alarm” was announced in Spain.⁸ Restrictions were put in place, which minimized interpersonal relationships and limited geographical mobility. In addition, educational and sport activities were canceled for children and teenagers. Several studies showed a decrease in physical activity and a worsening of depressive symptoms in children and athletes,^{3,7} and if these restrictions were to last longer, they could contribute to an increase in obesity and mental health disorders.^{2,12} According to the World Health Organization, children aged 5 to 17 years should exercise every day for at least 60 minutes (at a moderate to vigorous level), and 4 out of 5 children do not do this.^{9,10} Physical activity is key in preventing heart diseases, type 2 diabetes, and cancer. It also reduces anxiety, depression, and cognitive impairment and improves memory and brain health. Every movement counts, especially with the COVID-19 pandemic limitations.^{9,10}

The efforts to promote sports practice must be in line with safety protocols to prevent the possible transmission of SARS-CoV-2. Different protocols were put in place to mitigate its spread among children’s and young peoples’ sports practice, but there are very few studies that helped in making these decisions.^{1,6} This study was carried out with the objective of determining the occurrence of SARS-CoV-2 infection in children and young people who play federated football in Galicia and of comparing it with the infection rate registered in the general population.

METHODS

Design and Sample

A prospective observational cohort study was carried out between October 2020 and January 2021. It included all players aged 4 to 19 years who had a Royal Galician Football Federation (RFGF) club license (n = 23,845).

Measuring and Information Sources

On a regular basis, the RFGF territorial delegation provided the research team with an anonymous list of confirmed SARS-CoV-2 cases that were notified to the clubs. It included age, sex, sport discipline (indoor futsal or ordinary football), type of competition (wearing a mask during the game or not wearing it but having an antigen test screening every 14 days), number of isolated players, and number and result of the polymerase chain reaction (PCR) tests performed after 1 positive case was recorded.

A periodic antigen screening test was performed in those teams involving players aged 16 years and older, while for teams with players younger than 16 years, the use of masks was mandatory. Regardless of whether the use of a mask was required or not in a specific competition, all participants (players, coaches, technicians, assistants, and the public) signed a document that included the obligation to carry out a self-test to confirm if they have COVID-19 symptoms (fever $>37.5^{\circ}\text{C}$, cough, shortness of breath, chest pain, muscle aches, lack of taste, lack of smell, headache, sore throat, or diarrhea). In the case of children (<18 years old), it was their parents who signed the document promising to ask these questions prior to attending the sporting activity.

A case was considered positive after obtaining a positive SARS-CoV-2 PCR test result. This test was performed free of charge by the Galician public health system. All contacts of positive cases were immediately traced. In the presence of a positive case, other participants were isolated if they had had direct contact without a mask. An outbreak was a group with an epidemiological link in which ≥ 3 positive cases were recorded in less than 14 days.

The data for SARS-CoV-2 infection in the Galician population were obtained from the Galician General Directorate of Public Health in an aggregated form by sex and age.

Analysis

A descriptive analysis of the cases was carried out. The cumulative incidence of the infection was calculated by age and sex, comparing it with the incidence rate in Galicia.

Legal and Ethical Aspects

The study was carried out on approval of the research ethics committee of A Coruña-Ferrol (code 2020/487). The data provided to the researchers were anonymous, in accordance with the Spanish Organic Law 3/2018.

RESULTS

A total of 71 cases of SARS-CoV-2 infection were registered in players aged 4 to 19 years. Therefore, the cumulative incidence was 29.8 cases per 10,000 licenses in 4 months.

The highest rate was registered in players aged 16 to 19 years (121.1 cases per 10,000), and the lowest in players aged 4 to 7 years (8.6 per 10,000) and 8 to 11 years (6.3 per 10,000). Considering all age groups, the highest incidence was recorded in female players (56.7 vs 27.9 per 10,000)

For the same time period and age range, the SARS-CoV-2 infection incidence in Galicia was 283.7 cases per 10,000 inhabitants (rate ratio = 9.5). Therefore, the incidence was lower than the populational incidence in all age ranges and both sexes (Table 1).

Table 1. Incidence of COVID-19 in children and young people who play federated football in Galicia, between October 2020 and January 2021^a

	4-7 Years	8-11 Years	12-15 Years	16-19 Years	Total
Number of licenses					
Women	99	376	640	473	1588
Men	2224	7523	8525	3985	22,257
Total	2323	7899	9165	4458	23,845
Positive SARS-CoV-2 cases					
Women	0	0	5	4	9
Men	2	5	5	50	62
Total	2	5	10	54	71
RFGF rate per 10,000					
Women	0.0	0.0	78.1	84.6	56.7
Men	9.0	6.6	5.9	125.4	27.9
Total	8.6	6.3	10.9	121.1	29.8
Galician incidence rate (per 10,000)					
Women	267.5	288.7	326.6	357.8	310.5
Men	210.0	234.4	267.4	323.6	258.8
Total	237.8	260.8	296.3	340.2	283.7
Rate ratio	27.62	41.20	27.15	2.80	9.53

RFGF, Royal Galician Football Federation; SARS-CoV-2, severe acute respiratory syndrome coronavirus 2.

^aComparison with the Galician population incidence.

The highest figures were registered in January (40.7 per 10,000 licenses), coinciding with the highest peak in the population incidence (Figure 1).

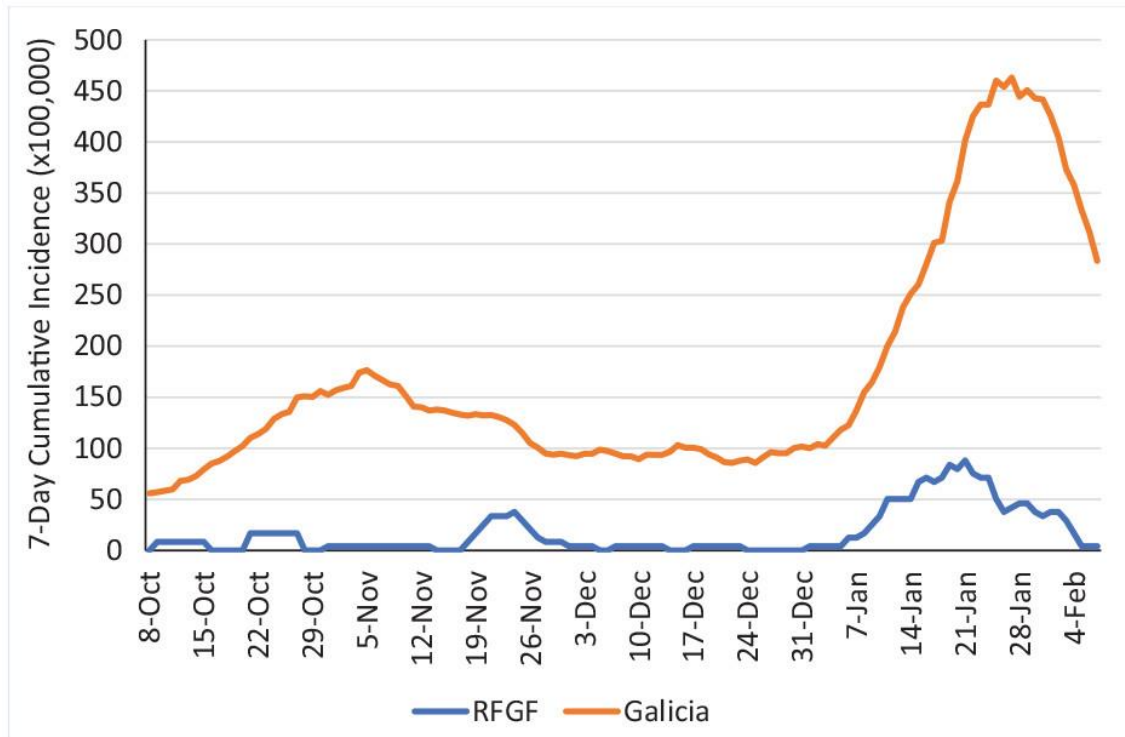


Figure 1. Seven-day COVID-19 cumulative incidence in children and young people with a license in the Royal Galician Football Federation (RFGF) between October 2020 and January 2021. Comparison with the 7-day cumulative incidence in the Galician population (4-19 years old).

More cases were recorded in futsal (42.9 per 10,000) than in ordinary football (27.5 per 10,000) and in competitions with a screening (127.4 per 10,000) than in those without a screening but with the use of masks (9.1 per 10,000).

A total of 45.1% of positive cases were identified by protocolary tests carried out on asymptomatic players (62.3% of detected cases in competitions with this screening).

In most cases (59.2%), it was not necessary to isolate any other team player (median = 0; average = 5.5). In total, 336 players were isolated (1.4% of the total), and 165 were tested by PCR (0.7%).

Two outbreaks were registered out of 2389 teams (0.08%). One of the outbreaks was detected in a team that played indoor wearing masks, and the other one in a team with screenings every 14 days. Both of them originated in nonsport activities; the use of public transport and changing rooms without a mask are identified as sensitive places.

DISCUSSION

This study shows that the SARS-CoV-2 infection incidence in children and the young population who play federated football with COVID prevention protocols is lower than the general population incidence for the same age. The rate is lower when this sport is played outdoors.

To the best of our knowledge, there are no other studies published in this sense. Although the results refer to playing football in a specific geographical area, they show that the protocols in place (periodic screening tests or wearing of a mask, together with symptom self-test and general hygiene measures) were effective and supported the practice of sport for children and young people. Other studies show similar results, finding a lower incidence in outdoor and no-contact sports when players wear a mask.^{6,11,13,14} The aforementioned studies do not show a higher incidence in team sports, such as football, than in individual sports.¹⁴

The incidence was higher in teenagers than in children and in women than in men, but these differences can also be observed in the general population. Although in the general population, incidence rates were higher in women than in men in all age groups, the same was not observed among players, probably because of a lower number of women in some age groups.

The 7-day cumulative incidence curve was parallel to the evolution of the SARS-CoV-2 infection in Galicia in the same period. These findings coincide with those from other authors.¹¹ These results (along with the fact that both outbreaks were linked to nonsport activities) suggest that practicing sports with appropriate protocols is safe. The detected cases were a reflection of the virus circulation in the population and did not signify an additional risk.

The results show that the screening tests allowed the early detection of asymptomatic patients. This would explain why the incidence peak was reached immediately before the populational peak. More than 60% of positives in competitions with regular screenings were detected with these tests; hence, the low number of outbreaks. Screenings allowed the detection of asymptomatic cases; hence, the higher infection rate incidence in competitions that used it. If screening tests were generalized to all competitions, a higher incidence than that registered in this study would be expected. However, it would still be inferior to that of the general population, and it should not be ignored that wearing a mask has also proved to be effective.

These results support the safe practice of sport using COVID prevention protocols, either by screening tests or by wearing of masks, which could be extended to nonfederated sports. The data support the practice of sports for children and young people, in accordance with the World Health Organization recommendations during a pandemic.

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