

CHARACTERISTICS OF INCIDENCE RATE OF COVID-19, ACUTE RESPIRATORY DISEASES, INFLUENZA AND COMMUNITY ACQUIRED PNEUMONIA IN RUSSIA ACCORDING TO CLIMATE, GEOGRAFICAL ASPECTS AND POPULATION DENSITY

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Background: Understanding the impact of geographical aspects and population density on the incidence rate (IR) of respiratory infections in Russia is necessary for successful control under the epidemic.

Aim: to estimate the increase in IR of respiratory infections in 2020 compared to the same period of 2016-2019

Materials and methods: a retrospective study of IR of COVID-19, ARI, influenza and community acquired pneumonia (CAP) in summarily (respiratory infections and COVID-19 morbidity) in the first half of 2020 in comparison with morbidity of ARI, influenza and CAP (respiratory infections morbidity) the same period of 2016-2019 in 85 regions was performed. Additionally the influence of climate on COVID-19 morbidity were estimated.

Results:

The highest excess of respiratory infections and COVID-19 morbidity in 2020 versus the average respiratory infections morbidity in 2016-2019 was observed in Buryatia-107.61%; Zabaykalsky Krai -134.09%; Tuva – 166.34%; the Kaliningrad region – 1023.41%; the Republic of Altai – 1212.78%; Dagestan – 2030.27%.

Buryatia, Tuva, Altai and Zabaykalsky Krai are located next to the China, and also border each other. The Kaliningrad region borders on the EU countries. Dagestan has a maritime border with 3 states, including Iran, where the epidemic COVID-19 began earlier. In 43 of the 85 regions of Russia, this excess was 10-50%; in 35 subjects varied from 50% to 100%.

The correlation between the incidence of COVID-19 and the population density in the regions was weak ($r=0.26$).

The air pollution, has also a weak relationship ($r=0.26$) to the incidence rate. Moderate relationship was observed between the severity of negative temperatures in winter and the level

of morbidity($r=-0.51$). Milder climate probably contributed to the longer persistence of the virus in the environment and social activity.

Conclusion:

Russian regions bordering the PRC, the EU, Central Asia and the Middle East demonstrated the highest IR of influenza, ARI, CAP and COVID-19 in summertime in the first part of this year versus the morbidity of influenza, ARI, CAP in average in first half of 2016-2019. IR of COVID-19 has weak correlation with population density and air pollution and moderate negative correlation with winter temperature.

Conflict of interest:

The authors declare no possible conflicts of interest.

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