SUMMARY

Objectives: The aim of the analysis was to determine the probable places of coronavirus transmission in association with the work and compare the situation between 2020 and 2021.

Methods: The work analysed data from the Information System of Infectious Diseases managed by the Institute of Health Information and Statistics of the Czech Republic in the period from March 2020 – December 2021.

Results: 2,483,219 COVID-19 cases were officially confirmed (732,202 during 2020 and 1,338,790 in 2021), from them 140,368 (6%) represented work-related disease, 520,830 cases (21%) work-related contact, and 1,822,021 (73%) out-of-work contact. There were identified 13 occupations with the highest incidence of COVID-19 in the observed period (458,341 cases), in descending order – clerk, machinist, teacher, craftsman, worker/agency worker, driver, sales worker/cashier, warehouse worker/expediter, nurse, manager, food worker, paramedic, and social worker. Comparing 2020 and 2021, there was a difference in the ranking of occupations by incidence of disease. In 2021, the risk of infection acquiring increased for the occupations clerk, machinist, craftsman, worker/agency worker, manager, and food worker, while it decreased for the health professions (nurse, other paramedic, physician) and for social worker; 5,514 cases of COVID-19 were recognized as an occupational disease in 2020 and 2021, from them 5,483 cases (99.4%) in the health and social care economic activity sector.

Conclusion: The available data show probable exposures to an infectious agent (without proof of specific contact with the source of the infection), of which 27% cases of COVID-19 are related to work (cases of work-related disease and work-related contact represented together the closest relationship to work). Different relevant anti-epidemic measures in the workplace have considerable practical importance for epidemic control. The use of personal protection of the mouth and nose with respirators/muffs is essential to reduce the risk of airborne transmission.

Key words: COVID-19, SARS-CoV-2 transmission, work-related disease, work-related contact, occupational disease, epidemic control

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a proven origin of the disease in the workplace. The last entity was a group of COVID-19 cases without work contact. These three entities were defined as such in the ÚZIS database without further specification. The authors added data of COVID-19 cases officially recognized as occupational diseases in 2020 and 2021 from the Registry of Occupational Diseases (National Institute of Public Health, Prague).

RESULTS

In total, 2,483,219 officially confirmed COVID-19 cases were reported in the period from March 2020 – December 2021 (732,202 during 2020 and 1,338,790 in 2021), from them 140,368 (6%) represented work-related disease, 520,830 cases (21%) work-related contact, and 1,822,021 (73%) out-of-work contact. The incidence of COVID-19 cases in individual months of the observed period is shown in Fig. 1.

There were identified 13 occupations with the highest incidence of COVID-19 in the observed period (458,341 cases), in descending order – clerk, machinist, teacher, craftsman, worker/ agency worker, driver, sales worker/cashier, warehouse worker/ expeditor, nurse, manager, food worker, paramedic, and social worker (Fig. 2). Comparing 2020 and 2021, there was a difference in the ranking of occupations by incidence of disease (Fig. 3). In 2021, the risk of infection acquiring increased for the occupations clerk, machinist, craftsman, worker/agency worker, manager and food worker, while it decreased for the health professions (nurse, other paramedic, physician) and for social worker (Fig. 4). In 2021, driver, sales worker/cashier and warehouse worker/expeditor were newly included in the most risky occupations, while physician, miner and policeman dropped from the ranking of the most risky occupations compared to 2020 (Fig. 2).

One hundred and fifty cases of COVID-19 were recognized as an occupational disease in 2020, from them 148 cases in the health and social care economic activity sector, 5,364 cases of COVID-19 were recognized as an occupational disease in 2021, from them 5,335 cases (99.5%) in health and social care economic activity sector (3, 4); together in 2020 and 2021 5,514 cases of COVID-19 were recognized as an occupational disease (5,483 cases, 99.4% in the health and social care economic activity sector).

DISCUSSION

The described differences in the ranking of occupations according to the incidence of diseases between 2020 and 2021 can be partly explained by the gradual vaccination, especially of health and social care professionals exposed to a significant risk of transmission of infectious agents, the use of effective personal protective equipment, especially with regard to airborne transmission of infectious agents, and the overall caution in the examination and treatment of patients/clients. The reduction in the incidence of disease among health and social service professionals in 2021 may also have been due to acquired immunity after the disease. Conversely, the clerical, managerial (white-collar) and blue-collar professions also seemed to have a greater underestimation of the risk of infection (Fig. 4).

The probability of transmission of infectious agents is modified by its dose, climatic conditions, indoor stay, ventilation, introduction or release of restrictions, presence at work or outside, use of a means of transport, and other factors that are difficult to predict. The spread of infection between persons is by respiratory droplets, which are produced when an infected person coughs, sneezes or speaks, and the virus can be carried as an aerosol over a considerable distance by the air current (5). Therefore, the use of personal protection of the mouth and nose with respirators/muffs is essential to reduce the risk of airborne transmission, especially when there is a large concentration of people in enclosed, unventilated areas or even when using air conditioning (6).

While the entities “work-related disease” and “work-related contact” are not clearly defined in the analysed statistical data,
For recognition of COVID-19 as an occupational disease, the following conditions must be met:

- the disease must be clinically proven and must also be confirmed by laboratory examination;
- it must be verified by a hygiene/epidemiological investigation that the working conditions listed in the list of occupational diseases are met.

If the COVID-19 disease has arisen in work for which there is a hygienic (epidemiologically) proven risk of infection, it shall be recognized and reported as an occupational communicable disease. The phrase “risk of infection” means a higher probability of transmission in the actual performance of the work than in other usual contact with other persons, even in the event of an epidemic occurrence of the disease.

**CONCLUSIONS**

The course of the epidemic COVID-19 was substantially influenced by the repeated alternation of restrictions and releases of anti-epidemic measures, often taken late on the basis of political decisions, and, moreover, illogically at different periods in schools, offices, shops, restaurants, transport, and enterprises. The available data show probable exposures to an infectious...
agent (without proof of specific contact with the source of the infection), of which 27% of COVID-19 cases are related to work (cases of work-related disease and work-related contact together represent the closest relationship to work). The relative reduction in the incidence of COVID-19 in 2021 compared to 2020 in the health and social care professionals can be partly explained by progressive vaccination, the use of effective personal protective equipment, particularly with regard to airborne transmission of the infectious agent, and overall caution in the examination and treatment of patients/clients. Conversely, there appears to have been a greater underestimation of the risk of infection in the clerical, managerial (white-collar) and blue-collar professions, and no significant improvement could be observed even among teachers.

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Conflict of Interests
None declared

REFERENCES

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