COVID-19 AND POST-COVID-19 SYNDROME AS AN OCCUPATIONAL DISEASE

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Abstract. *An occupational disease is one that occurs exclusively or mainly under the influence of the harmful factors of the working environment and is included in the list of occupational diseases. Since the early stages of the pandemic, it has been proposed that COVID-19 be recognized as an occupational disease worldwide, but to date the situation varies from country to country. Even more serious turn out to be the complications of the disease (the so-called long COVID or post-COVID-19 syndrome (PCS). Patients may experience symptoms for up to 3 months or more after the onset of infection, which significantly reduces their ability to work and impairs their quality of life. To date, COVID-19 and long-term COVID-19 are not included in the lists of occupational diseases provided by international organizations (International Labor Organization, World Health Organization (WHO), European Union (EU)) and are not recognized as an occupational disease in Bulgaria and in most countries. This leads to a number of economic complications both for the patients (and their families), as well as for the employer and the state.*

Key words: *COVID-19, post-COVID-19 syndrome, occupational diseases*

Introduction

In a very short period of time, the COVID-19 virus spread worldwide, but its complications turned out to be even more serious. Symptoms can last weeks or months after the onset of infection (so-called “long COVID”, PCS), which significantly worsens the quality of life of patients and reduces their ability to work [1, 2, 3, 4]. Since the beginning of the pandemic, affected countries have tried to flatten the epidemiological curve by imposing specific hygiene measures, limiting social contact, wearing a mask, physical distancing, travel restrictions, border closures, national lockdowns, mandatory quarantine for infected and contact persons, the development of highly effective vaccines, etc [1, 5, 6]. The disease and its consequences proved to be a serious health and economic problem both for the affected individuals (and their relatives), as well as for employers and the affected countries in general [7, 8, 9, 10, 11, 12, 13, 14].

Occupational pathology studies the etiology, pathogenesis, clinical picture, treatment, prevention of the disease, as well as the examination of working capacity [15].

Occupational diseases are chronic conditions that can be divided into three groups: specific (caused only by the work environment), conditionally occupational (the occupational nature of the disease is accepted only under certain conditions), paraprofessional (diseases with a complex etiology, in which the work environment is a triggering or contributing factor) [16, 17]. The list of occupational diseases valid for Bulgaria (State Gazette No. 65/22.07.2008 by Decree No. 168/11.07.2008) includes 5 main groups:

1. Diseases caused by chemical factors in the working environment;
2. Diseases caused by physical factors and overstrain;
3. Diseases caused by biological factors (infectious and parasitic);
4. Dust and allergic diseases;
5. Occupational malignant diseases.

These diseases are of extreme social importance because they affect persons of active age, with significant professional experience and qualifications, have a chronic recurrent course, generate losses (for the worker, the employer, the state), have low disclosure (due to non-specific symptoms or the patient‘s refusal to relate his illness to the working environment) [16].

For the diagnosis of these diseases, the occupational history, professional work experience, the hygienic characteristics of the working environment, gender and age of the patient, general history, professional anamnesis, clinical picture, laboratory, functional and instrumental studies of the current disease, epidemiological, exposure and elimination test to follow the dynamics of the disease are of great importance [15, 16, 17].

Their treatment is complex: etiological (when possible) and symptomatic, climate and balneotherapy and vitamin intake are also recommended [16].

The main direction is the prevention of these diseases: technical, architectural-planning, landscaping, labor - hygienic, curative-prophylactic and labor legislation [15, 16,17].

According to the Ordinance on the procedure for notification, registration, confirmation, appeal and reporting of occupational diseases [18]. any doctor / dental practitioner within 5 days of diagnosis can announce an occupational disease. A so-called quick notification must be sent to the territorial branch of the National Insurance Institute (NSSI). Within 3 days NSSI opens a dossier and creates a commission. The insurer provides the NSSI with production characteristics, laboratory tests, health dossier, risk assessment and the opinion of the STM (occupational medicine service) within 1 month. NSSI, within 10 days, creates a protocol for a study of the factors of the working environment. In case of disagreement (on the part of the employee or the employer), it is possible to send a written objection to TELK (Territorial Expert Medical Commission) within 3 days. TELK issues an expert decision and a registration card for a recognized occupational disease, determining temporary or permanent incapacity for work. The temporary loss of work capacity provides for temporary release from work, reduced working conditions at the same workplace, temporary or permanent employment. The permanent loss of working ability is assessed in percentages, and this determines the amount of the disability pension [15, 16, 17].

COVID-19 as an occupational disease

Since the early stages of the pandemic, it has been proposed that COVID-19 be recognized as an occupational disease worldwide, but to date the situation varies from country to country [19]. Table 1 summarizes the situation in selected countries. Some countries have recognized COVID-19 as an occupational disease (e.g. Austria, Argentina, Ger-

Table 1. Recognition (non-recognition of COVID-19 as an occupational disease) occupational accident

Country	Recognized as an occupational disease	Recognized as an occupational accident	Conditional occupational disease (recognized under certain criteria)	There is no specific regulatory regulation	There is no specific regulatory regulation, but it can be compensated
Australia [10, 19]	-	-	Yes	-	Yes
Austria [20]	Yes	-	-	-	-
Argentina [19]	Yes	-	-	-	-
Belgium [19]	-	-	Yes	-	-
Brazil [20]	-	-	-	-	Yes
Bulgaria [20]	-	-	-	Yes	-
Vietnam [20]	-	-	-	Yes	-
Germany [19]	Yes	Yes	-	-	-
Greece [20]	-	-	-	Yes	-
Denmark [20]	Yes	-	-	-	-
Dominican Republic [10]	Yes *	-	-	-	Yes
Estonia [20]	-	-	-	Yes	-
Zambia [20]	-	-	-	Yes	-
Italy [19]	-	Yes	-	-	-
Spain [20]	Yes	-	-	-	-
Canada [10, 20]	-	-	Yes	-	Yes
China [10, 19]	-	-	Yes	-	Yes
Liberia [20]	-	-	-	Yes	-
Malaysia [19]	Yes	-	-	-	-
Mexico [20]	-	-	-	Yes	-
Norway [19]	Yes	-	-	-	-
Paraguay [20]	-	-	-	Yes	-
Republic of Korea [19]	-	Yes	Yes	-	-
USA [10, 19]	-	-	-	-	Yes *
Singapore [19]	-	-	-	-	Yes
Slovenia [20]	-	-	-	Yes	-

Continuation of Table 1

Taiwan [19]	-	-	-	-	Yes
Turkey [19]	-	-	-	-	Yes
Uganda [20]	-	-	-	Yes	-
Ukraine [10]	Yes	-	-	-	-
Philippines [20]	Yes	-	-	-	-
France [10, 19]	Yes	-	-	-	-
Haiti [20]	-	-	-	Yes	-
Chile [20]	Yes	-	-	-	-
Switzerland [9, 10]	-	-	-	-	Yes
Sweden [20]	Yes	-	-	-	-
South Africa [19]	Yes	-	-	-	-
Japan [19]	-	-	Yes	-	-

* different regulations according to region and worker or recognized only for certain groups (e.g. healthcare workers)

many, Denmark, Spain, Malaysia, Norway, Ukraine, Philippines, France, Chile, Sweden and South Africa) or occupational accident (e.g. Germany, Italy, Republic of Korea), in others (Belgium, Republic of Korea, Japan) it is necessary to meet certain criteria, in others the disease is not recognized as occupational (Bulgaria, Vietnam, Greece, Estonia, Zambia, Liberia, Mexico, Paraguay, Slovenia, Uganda, Haiti), and for the fourth, there is no specific regulatory regulation, but it can be compensated upon proving a causal relationship (Australia, Brazil, Canada, China, USA, Singapore, Taiwan, Turkey, Switzerland).

According to a UNI Global Union survey (which includes 124 countries, 37 USA states, 13 Canadian provinces and territories, and seven Australian states), just over half of countries (98) have recognized COVID-19 as an occupational disease through a formal regulatory process, with around 80% require workers to provide proof that they contracted COVID-19 in the workplace. The top ten rated jurisdictions (those of Argentina, Austria, Sweden, France, Spain, Canada, Germany, Chile, Brazil, Philippines) in this study cover only 2% of the world's workers. Almost 43% of workers do not have access to paid sick leave. Based on this research, the authors develop a set of recommendations to help states better support workers affected by COVID-19 and deal with future pandemics:

– Automatic qualification for benefits related to Covid-19 disease when there is an increased risk of contracting the virus in the work environment;

– Reliable collection of work-related data;

– The addition of a general category for occupational infectious disease;

– Paid sick leave for research and recovery

– Research published by Amnesty International, UNI Global Union and Public Services International found that as of April 2021, at least 17,000 healthcare workers had died from COVID-19. According to Recommendation 194 of the ILO (International Labor Organization), diseases, caused by biological agents not directly mentioned in the list (as is the case with COVID-19) can be recognized as occupational if a direct link between the work and the workplace is established [20].

Occupational health and safety should be a fundamental right in the workplace [20].

To date, COVID-19 is not included in the lists of occupational diseases provided by international organizations (International Labor Organization, WHO, EU) [19].

According to the European Union of Medical Specialists, COVID-19 can and should be recognized as an occupational disease if it meets certain criteria:

Clinical manifestations (at least respiratory symptoms) and a positive PCR test must be present;

Sufficient occupational exposure – by taking occupational anamnesis, results of epidemiological studies at the workplace;

The time between exposure and the effect on the patient's health should correspond to what is known about the natural course and development of the disease – for COVID-19 this period is 1-10 days;

The differential diagnosis should be considered. There are non-occupational conditions that have similar clinical features to occupational diseases [21].

At the moment, this is only a recommendation and is not an official document obliging EU member states to recognize COVID-19 as an occupational

disease. Furthermore, the proposed criteria do not cover asymptomatic workers.

Member States, workers and employers in the EU's Advisory Committee on Safety and Health at Work (ACSH) reached agreement (in May 2022) on the need to recognize COVID-19 as an occupational disease in health and social care and in the home aid, and in the context of a pandemic in sectors where there is an outbreak in activities with a proven risk of infection, and supported the update of the EU List of occupational diseases. The Commission has updated its recommendation on occupational diseases to encourage the recognition of COVID-19 as an occupational disease by all Member States. This is an important step to implement the EU Strategic Framework for Health and Safety at Work 2021-2027, adopted by the Commission in June 2021, which sets out key actions at EU level to improve the health and safety of workers. Many EU Member States already recognize COVID-19 as an occupational disease or occupational accident. The update aims to further promote the recognition of COVID-19 as an occupational disease across the EU. One of the key cross-sectoral objectives is to increase preparedness for possible future health crises. It also suggests strengthening support for workers during possible future waves of COVID-19 [22, 23].

In November 2022, the European Commission recommended that member states recognize COVID-19 as an occupational disease if workers become infected:

– in disease prevention

– in health and social care

– in domiciliary assistance

– or (during a pandemic) in other sectors where there is an outbreak and where a risk of infection has been proven [22].

The Commission also emphasizes the importance of supporting workers infected with COVID-19 and families who have lost members due to exposure to the infection at work. The report aims to strengthen worker protection and promote a consistent approach across the EU. Member States should define the details in their national legislation following this recommendation [22].

The first described occupational group affected by COVID-19 was wholesale animal workers in Wuhan [5]. Concerns have arisen about occupational infection among health care and agricultural workers, those in overcrowded workplaces (eg, cruise ships and meatpacking plants), and those defined as „essential" workers (ie, workers considered critical to public infrastructure, who often have no choice or means to protect themselves from the virus).

To this day, the pandemic continues to take a heavy toll on workers, may pose long-term health risks and increase mortality. Complications of COVID-19 (such as pulmonary fibrosis, vascular disease, conditions related to fatigue and dyspnea, post-infectious myositis) can further reduce patients' work capacity and impair their quality of life [5].

Another interesting aspect is the occupational diseases that could be indirectly linked to COVID-19. For example, the use of cleaning and disinfecting products to eliminate SARS-CoV-2 from surfaces in the environment can lead to acute inhalation injury (eg. occupational asthma) and exacerbation of airway disease (eg. asthma or chronic obstructive pulmonary disease) or new cases of such disease [24, 25]. Since the beginning of March 2020, there have been reports of incidents of inhalation of aerosols from bleach cleaning products and hand sanitizers and associated respiratory and dermatological complaints [26, 27, 28].

In order to assess whether or not COVID-19 is an occupational disease, it is essential to have clear and transparent criteria for the definition of occupational diseases that will help distinguish them from diseases of different origins. There are different procedures around the world that would determine the occupational nature of the disease. This procedure can be based on individual (medical and technical) assessments or on data related to workplace exposures, as well as scientific studies on occupational risks. The procedure for recognizing COVID-19 can be organized in different ways, namely:

– A national list of occupational diseases containing the exact criteria for recognition, supplemented by an additional system for the recognition of diseases which is not included in the list.

– Individual assessment of cases by experts.

– A combination of these two systems: (a) a national indicative list or list of occupational diseases published by the International Labor Organization (ILO) or the European Commission is used as a reference and (b) case-by-case investigations are carried out for more further determining the cause-and-effect relationship between work and illness [29].

COVID-19 is not specifically mentioned in the Ordinance from 2008 [18] and the ILO List of Occupational Diseases (2010) [30] but nevertheless falls under Article 2 paragraph 2 [18] and Article 1.3.9 [30]:

„Art. 2. (2) (Amended – State Gazette, No. 18 of 2015, in force from 1.01.2015) An illness not included in the list of occupational diseases can

also be recognized as an occupational disease, when it is established, that it was primarily and directly caused by the usual work activity of the insured and caused temporary incapacity, permanently reduced working capacity or death of the insured.“ [18]

„1.3.9. Diseases caused by other biological agents at work not mentioned in the preceding items where a direct link is established scientifi cally, or determined by methods appropriate to national conditions and practice, between the exposure to these biological agents arising from work activities and the disease(s) contracted by the worker.” [30]

However, not all countries follow the ILO list and many have their own national lists or assessment criteria to determine the occupational nature of a disease [29].

Financial Insecurity

The economic damage caused by the pandemic is not to be underestimated. The precarious financial situation of many workers reduces their ability to afford health care costs. In this regard, USA citizens (including healthcare workers) who do not have health insurance, are not entitled to paid sick leave, or cannot afford treatment costs are twice as likely to avoid seeking treatment for COVID-19 due to concerns about their financial situation [8].

Low-income countries and even better-resourced nations may sometimes lack sufficient disinfection supplies, PPE, and other administrative or engineering protections in health care facilities and other workplaces [9].

In August 2022, there were 25 million cases of COVID-19 in the UK. Research by the TUC (The Trades Union Congress) found that 20% of workers with prolonged Covid had seen a negative impact on their job security, including having to leave work. For many workers, doing their jobs puts them at greater risk of contracting COVID-19 (a virus that can cause ill health for more than a year and kills more than 15,000 people of working age in the UK) [10].

Analysis by the ONS (Office for National Statistics) published in December 2022 concluded that prolonged Covid is likely to be one of the factors contributing to declining labor force participation rates during the pandemic. Over a one-year period (July 2021 and July 2022), the inactivity rate among working-age people with prolonged Covid rose by 3.8 percentage points, compared to 0.4 percentage points for working-age people without prolonged Covid. The ONS concluded that people of working age are less likely to be in the labor market after developing long Covid. This results in lost profits of £1.5 billion per year. The most affected sectors are health, social care and education, followed by civil service/local government, transport, food services and retail [10, 11].

In the UK, in 2021, the all-party parliamentary group on coronavirus presented to the Prime Minister Boris Johnson a proposal to recognize “prolonged covid” as an occupational disease and introduced a financial compensation scheme (similar to the Armed Forces Compensation Scheme (AFCS)) for health and other key workers (total 390,000 people) living with the “debilitating” effects of the disease [7, 31]. Long Covid has been described as the “hidden health crisis of the pandemic”. The letter comes after the UK government announced £18.5m (€21.3 m; $25.9 m) of funding to research the effects of long-term covid in patients [7].

Recognizing COVID-19 and long-term COVID as an occupational disease would entitle workers to protection and compensation if they contract the virus while at work. This means that those who qualify will receive regular monthly payments depending on their circumstances and level of need. There are reports of many healthcare workers with prolonged Covid who are unable to work and are financially insecure [7].

The UK government has yet to formally respond to the call for any compensation, compensation scheme or recognition of the disease as an occupational disease [32].

Importance of recognizing COVID-19 and PCS as an occupational disease

COVID-19, especially at the beginning of the pandemic, had devastating effects on people‘s health, the economy and our everyday live [33].

The disease is a huge challenge for occupational health, as workers in many occupations (healthcare workers, workers in shops, bars, restaurants, fast food and delivery services) face a high risk of infection. There is a long list of jobs that involve direct contact with the public and close physical proximity to others. However, there are also many jobs where working from home is possible, thus greatly reducing the risk of contracting the virus [6]. Healthcare workers are at increased risk of exposure to a high viral load due to close contact with patients with COVID-19. At the same time, they themselves are an important source of transmission of the disease to colleagues, patients,

friends and family. Healthcare workers do not have the option to work from home during pandemics and health emergencies [6]. Early evidence from Wuhan, the source of the global outbreak, showed that – of all coronavirus cases – almost 4% involved health care workers, about 15% were severe or critical, and five deaths among health care workers were confirmed [34]. In Italy, the worst-affected country in Europe, on March 26, 2020, it was reported that more than 5,000 healthcare workers had tested positive for the coronavirus and more than 40 had died as a result of COVID-19 [35].

However, the consequences of COVID-19 turned out to be more serious. Among the many challenges posed by the pandemic, one is whether prolonged post-infection symptoms (also called "long COVID") should be considered an occupational disease.

One in 10 people with Covid-19 continue to experience symptoms for more than 12 weeks, posing a significant risk to employment status and earning potential. Long Covid can present with clusters of symptoms that often overlap, regardless of the severity of the infection. Analyzes of large health databases have identified a variety of post-acute complications among patients with COVID-19 and over 205 symptoms associated with prolonged covid in previously healthy adults and children. These range from malaise, pain, headache, fatigue, shortness of breath, cough, anxiety and stress, metabolic and cardiovascular disorders, stomach problems, musculoskeletal pain, anemia, cognitive impairment and inability to concentrate (brain fog). There have been reports of people continuing to experience debilitating symptoms after more than nine months. These symptoms cause workers to require extended periods of sick leave. The risk of occupational exposure in certain sectors is higher, for example 64% of all reports submitted by employers are from the health and social care sector [7, 10, 32, 36].

The call to recognize "long COVID" as an occupational disease raises several important questions: what is the definition of "long COVID"; what is the level of symptom severity and duration of symptoms to be included; whether objective tests are required and what evidence must be present to confirm the occupational relationship.

NICE (National Institute for Health and Care Excellence) defines „long-term COVID" as „signs and symptoms that persist or develop after acute COVID-19". Includes both ongoing symptoms of COVID-19 and "post-COVID-19 syndrome". Post-COVID-19 syndrome is defined as „signs and symptoms that develop during or after an infection consistent with COVID-19, persist for more than 12 weeks, and are not explained by an alternative diagnosis." [31]. The World Health Organization (WHO) defines "post-COVID-19 condition" among individuals with a history of probable or confirmed SARS-CoV-2 infection with symptoms persisting three months after the onset of COVID-19 infection that persist for at least two months, and which cannot be explained by an alternative diagnosis [37]. The most common symptoms include fatigue, shortness of breath and cognitive dysfunction and have an overall significant impact on patients' daily life. Symptoms may appear after initial recovery from an acute episode of COVID-19, persist throughout the illness, vary, or recur over time [36]. The Global Burden of Disease Long COVID Collaborators defines three main symptoms of a post-COVID-19 condition: (1) persistent fatigue with body pain (myalgia) or mood changes; (2) cognitive problems, frequent forgetfulness, or difficulty concentrating, commonly referred to as „brain fog"; (3) persistent respiratory problems (shortness of breath and persistent cough) [38].

According to Pèrez-Gonzàlez et al. long symptoms of COVID-19 were more common in hospitalized than in non-hospitalized patients (52.3% vs. 38.2%). The prospective cohort study followed 248 patients over a 6-month period, with 176 (69.4%) requiring hospitalization and 29 (10.2%) requiring intensive care. After 6 months, 119 (48.0%) patients described one or more persistent symptoms. The most common were: extrathoracic symptoms (39.1%), chest symptoms (27%), dyspnea (20.6%) and fatigue (16.1%). These symptoms were more common in hospitalized patients (52.3% vs. 38.2%) and in women (59.0% vs. 40.5%) [39].

Bellan et al. reported that long-term sequelae in patients hospitalized for SARS-CoV-2 pneumonia may persist in about 40% of patients one year after discharge. The 1-year cohort study of 200 patients reported at least one persistent symptom of COVID-19 in 79 patients (39.5%). Diffusing lung capacity for carbon monoxide (DLCO) < 80% was observed in 96 patients (49%). Severe diffusion capacity impairment (DLCO < 60%) was reported in 20 patients (10.2%). Some degree of motor impairment was observed in 25.8% of patients [40].

In the study by Liao et al. on the long-term effects of COVID-19 on 303 hospitalized healthcare workers, one year after discharge, in Wuhan highlighted that the physical and psychological functions of the survivors were significantly worse than the healthy population. The mean age of the participants was 39.0 (33.0-48.0) years, with 59 (19.47%)

men and 244 (80.53%) women. Additionally, 98 (32.34%) were doctors, 162 (53.47%) were nurses, and 43 (14.19%) were health care assistants. The average length of hospital stay is 15 (9-26) days. Of the participants, 96.7% were non-smokers. The most common comorbidity was hypertension (15 patients, 4.95%), followed by hyperlipidemia (4 patients, 1.32%), and cardiac, endocrine, and liver diseases (2 patients, 1.32%). COVID-19 was classified as mild/moderate in 113 (37.3%) participants and as critical/severe in 190 (62.7%) patients. The critically/severely ill were older and had a higher body mass index (BMI). About 64.69% (196 patients) required oxygen therapy during their hospital stay. One year after discharge, 83.45% of recovered health care worcers still had positive serum SARS-CoV-2 IgG tests, and the rate was significantly higher among health care workers surviving critical/severe (89.27%) illness than among those with mild/moderate disease (73.83%). The rate of positive serum SARS-CoV-2 IgM tests was also higher in health care workers experiencing critical/severe illness than in those with mild/moderate illness. One year after discharge, surviving health care workers had reduced lung function, abnormal CT pattern (most commonly pulmonary interstitial fibrosis), impaired physical function, and psychiatric disorders (most commonly post-traumatic stress disorder) [41].

In a pooled study of over one million subjects, the prevalence of the post-COVID condition was 0.9% at one year, but as high as 15% for symptoms that were present at three months [36]. Various factors are associated with post-COVID status, including age 20-49 years, female sex, and initial severity of illness (need for hospitalization, intensive care unit admission, and mechanical ventilation) [36, 38, 42, 43, 44, 45].

For example, 26.6% of women who needed intensive care had a post-COVID condition after one year [36].

Most of the post-COVID symptoms found in the general population are similar for workers. In a review including 60 cohort studies of working-age adults (18-65 years) and 10 case studies, the most commonly reported symptoms after mild COVID-19 infection were fatigue (92%), dyspnea (82%), muscle pain (44%) and joint pain (35%) [46].

In 2023 in the UK, it was estimated that 2 million people living in private households (3.0% of the population) self-reported prolonged COVID (symptoms lasting more than four weeks after the first confirmed or suspected infection with COVID-19, which are not explained by anything else), with over 85% being of working age [11, 47]. The data is from Long Covid Support and the Trades Union Congress (TUC) from 2 January 2023. In a report, they summarize the results of a self-selected survey of 3,097 people with long Covid, carried out between 14 September and 1 November 2022. Of the respondents, 45 percent had responsibilities for caring for a patient with prolonged COVID. The research found shockingly high rates of mistreatment by employers of workers with COVID-19 or prolonged COVID. One in seven respondents (14%) lost their job due to illness-related reasons. Two-thirds of respondents (66%) say they have experienced one or more types of unfair treatment in the workplace. One in six (16%) had been bullied at work, one in 13 (8%) had been threatened with disciplinary action and almost a quarter of respondents (23%) said their employer had asked them questions whether they have long covid or symptoms of the disease. Half of those surveyed (49%) have reason to believe they have contracted Covid-19 at work, highlighting that they are at risk due to a lack of health and safety measures, including ventilation and poor treatment. Nine out of ten respondents at the time of the survey had symptoms of prolonged Covid, most commonly fatigue, cognitive dysfunction, shortness of breath/difficulty breathing, cough, sore throat, loss of smell and/or taste, palpitations, dizziness, digestive problems, sleep problems, memory loss, mental stress and anxiety symptoms, mood changes, depression, tingling and pins and needles, noise or pain in the ears, dermatological symptoms, vision problems, fever and menstrual changes in women. Over half of respondents reported pain-related symptoms (headache, muscle pain, joint pain, and chest pain) [11].

In a study with a 15-month follow-up of workers, similar symptoms were reported: fatigue (80.2%), shortness of breath (69.6%), lack of concentration (44.9%), headache (44.9%), myalgia (44.1%), arthralgia (43.3%) and anosmia (42.1%). After 15 months, 75% of patients had returned to their pre-COVID-19 baseline status, although 33.2% reported a degree of work limitation. The study also found that women had a greater self-reported decrease in work ability after a COVID infection than men [43].

Conclusion

The disease COVID-19 and the so-called „long Covid“ affects a significant number of people of working age and their families. Employees in many

sectors, especially in the health care system, are at high risk of infection in the workplace. Distinguishing between workplace-acquired infection can be a difficult task, especially when there are high rates of community transmission. To date, COVID-19 and PCS are not included in the lists of occupational diseases of the ILO, WHO, EU and are not recognized as occupational diseases in Bulgaria and in most countries. Despite a clear time frame, the definition of "long COVID" is open to interpretation and the clinical picture continues to be diverse. Stakeholders should adjust their legislation at national level, as the legal aspect of occupational diseases entitles workers to compensation. Given the scale of the problem and the financial complexity, this may end up being more of a question for economists. In conclusion, COVID-19 and PCS remain an important topic for research on the occupational health of workers with a view to improving their quality of life and preventing or reducing disability as a result of the pandemic.

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