ISSN 2223-6775, Ukrainian Journal of Occupational Health, 2022, 18 (1), 12–21

UDC 613.62:[616.98:578.834]–036.21(477) https://doi.org/10.33573/ujoh2022.01.012

OCCUPATIONAL MORBIDITY IN UKRAINE DURING THE COVID-19 PANDEMIC: AN EPIDEMIOLOGICAL ANALYSIS

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Introduction. A report by the World Health Organization (WHO) and the International Labor Organization (ILO) (2021) states that occupational diseases and injuries claimed 1.9 million lives in 2016, mainly due to diseases of the respiratory and cardiovascular systems. In recent years, Ukraine has seen a gradual decline in occupational morbidity; and in-depth analysis of data shows that statistics do not fully reveal the complexity of the current situation in occupational pathology, especially during the COVID-19 pandemic, when there is a decline in attention in all industries except health care.

The purpose of the study is to identify patterns of occupational morbidity in Ukraine in the context of the COVID-19 pandemic.

Materials and methods of research. The dynamics of 2011–2020 provides a description of occupational diseases using the principle of continuous statistical sampling of primary documents compiled for all cases of newly discovered and registered occupational diseases in Ukraine. A separate analysis of occupational diseases for 2018–2019 compared to 2020, during the pandemic COVID-19 was performed.

Results. Occupational diseases indicators have a constant downward trend due to changes in the system of sanitary and epidemiological control over working conditions, medical care for employees, imperfect accounting and registration of occupational diseases. In 2020, 3,054 cases of occupational diseases related to COVID-19 were registered. The pandemic has reduced the attention of professionals to the problem of occupational diseases among industrial workers.

Conclusions. The number of employees in the main sectors of the economy in conditions that do not meet sanitary and hygienic norms and requirements is 29.6 % of the registered number of full-time employees. There is a constant decrease in the registered number of patients and a decline in the level of occupational diseases in the dynamics of 2011–2020. In the structure of occupational diseases, the first place belongs to diseases of dust aetiology (40.0–83.0 %), the second to diseases of the musculoskeletal system (about 21.2–40.0 %), the third to vibration disease (3.0–9.0 %), fourth to neurosensory deafness (2.6–6.0 %) and occupational pathology of chemical origin (2.4–3.6 %). A comparative analysis of occupational diseases levels for 2018–2020 shows that the COVID-19 pandemic has changed the ratio of indicators towards reduction or stabilization, which depends on reducing the attention of health professionals and society to identify occupational diseases among workers in various industries, except health care. The main circumstances that led to occupational diseases in 2020 include imperfection of the technological process (33.1 %), non-compliance of collective and individual protection with the established requirements and their insufficiency, non-use of personal protection (10.8 %) and imperfection of mechanisms and tools (10.0 %).

Key words: occupational diseases, types of economic activity, accounting and registration

Introduction

A report by the World Health Organization (WHO) and the International Labor Organization (ILO) (2021) states that occupational diseases and injuries claimed 1.9 million lives in 2016, mainly due to diseases of the respiratory and cardiovascular systems. A total of 81 % of deaths were caused by non-communicable diseases, with chronic obstructive pulmonary disease in first place, stroke in second and coronary heart

ISSN 2223-6775, Ukrainian Journal of Occupational Health, 2022, 18 (1), 12–21

disease in third. The authors of the study examined 19 risk factors associated with work, including long working hours, polluted air and noise. About 750,000 deaths are attributable to long working hours, WHO and ILO experts say. 450 thousand people died from diseases caused by inhaling polluted air saturated with harmful particles and various vapours [1]. Since 2020, there have been changes in the structure of occupational morbidity (OM) due to the emergence of occupational diseases associated with COVID-19 [2–4]. Analysis of the status of OM in Ukraine shows that the situation has remained unstable in recent years. The recording and registration of occupational morbidity remains imperfect. Only insurance cases subject to compensation for occupational injuries are registered. About 2,500 cases are registered every year in Ukraine. Multiple diagnoses in one person are not counted in the statistics, which, according to the Social Insurance Fund, amounts to 5.0–5.5 thousand diagnoses, as it was when the AIS «Occupational Morbidity» existed at the Ministry of Health of Ukraine. The scientific rationale for the creation of the State Register of Occupational Diseases is under discussion and has not been translated into healthcare practice [5]. The situation is even more acute for OM analysis in the COVID-19 pandemic.

The purpose of the study is to identify patterns of occupational morbidity in Ukraine in the context of the COVID-19 pandemic.

Materials and methods of research

The methodology of study of OM prevalence was based on the principle of continuous statistical sampling of primary documents, compiled for all cases of newly detected and registered occupational diseases in Ukraine for the years 2011–2020. In order to establish the dynamics of OM (its primary detection), data for 2018–2019 compared to 2020 during the COVID-19 pandemic was analysed separately. Data were obtained from the Social Insurance Fund of Ukraine, the State Labour Service. All materials were processed according to the tasks set, followed by analytical combination tables, descriptive epidemiological analysis.

Complex hygienic, epidemiological, medical and statistical methods and system analysis were used to solve the tasks. During material processing generally accepted methods of sanitary statistics were used (calculations of occupational morbidity levels, indicator errors and confidence coefficients, mean values, cluster analysis).

In general, all basic data were collected and processed, given for 6543 cases of occupational diseases in Ukraine for 2018–2019, as well as for 3054 cases of COVID-19 among workers in 2020. The analysis included the distribution of cases of occupational diseases by regions, industries, forms of occupational pathology, taking into account the circumstances and causes of occupational pathology formation.

Results of the study and their discussion

OM level in Ukraine during the pandemic differed reasonably from previous years. In addition to the existing trends of occupational diseases, there are regulations that provide for acute respiratory disease COVID-19 caused by SARS-CoV-2 coronavirus to be also included in the statistical group of occupational accidents. These are Order of the Ministry of Health of Ukraine No. 521 of 25.02.2020 «On Amendments to the List of Especially Dangerous, Dangerous Infectious

ISSN 2223-6775, Ukrainian Journal of Occupational Health, 2022, 18 (1), 12–21

and Parasitic Diseases and Carriers of Pathogens of These Diseases», Instruction No. 374 «On Application of the List of Occupational Diseases» approved by Joint Order of the Ministry of Health, NAMS and Ministry of Labour of Ukraine No. 374/68/33 of 29.12.2000, Order of Ministry of Health of Ukraine No. 15. 07.2020 No. 1604 «List of positions of medical and other employees directly engaged in epidemic control and implementation of measures to prevent the spread of acute respiratory disease caused by SARS-CoV-2 coronavirus, and treatment of patients with cases of acute respiratory disease COVID-19 caused by SARS-CoV-2 coronavirus», CMU Decree of 13. 05.05.2020 No. 394 «On amendments to the list of occupational diseases», Section V, approved by the decree of the Cabinet of Ministers of Ukraine of 08.11. 2000 No. 1662, supplemented by acute respiratory disease COVID-19 caused by SARS-CoV-2 coronavirus, concerning only work of «medical and other employees directly engaged in epidemic response and implementation of measures to prevent the spread of acute respiratory disease COVID-19 caused by SARS-CoV-2 coronavirus, and treatment of patients with cases of acute respiratory disease COVID-19 caused by coronavirus COV-2». The quantitative indicators and their structure have changed. Therefore, the interpretation of the obtained results separates occupational diseases caused by specific working conditions and technological processes from COVID-19 infection.

During the analysis of morbidity COVID-19 at work [9] in case of COVID-19 there were difficulties in registration and recording because this diagnosis was not allocated a separate code in the International Statistical Classification of Diseases and Related Health Problems (ICD-10). By the Decree of the Cabinet of Ministers of Ukraine dd. 08.04.2020 No. 272 COVID-19 by a code according to ICD-10 is included as U07.1 2019-nCoV in the List of Nosological Forms of Infectious Diseases of International Concern (Annex 1 to the Rules of Sanitary Protection of the Territory of Ukraine, approved by the CMU on 22.08.2011 (893). The classifier of the type of event resulting in an accident, acute occupational disease (poisoning), accident (Annex 9 to Order No. 337) does not contain the type of event directly indicating infection with acute respiratory disease COVID-19 caused by coronavirus SARS-CoV 2 (there is a type of event «damage resulting from contact with animals, insects, other representatives of fauna, as well as flora»). Today, the State Labour Inspectorate of Ukraine registers cases of illness or death of health workers due to infection with acute respiratory disease COVID-19 caused by SARS-CoV-2 coronavirus as an event type «health deterioration» (event type code 22).

In accordance with the Order of the Ministry of Health of Ukraine No. 521 of 25.02.2020 «On Amendments to the List of Especially Dangerous, Dangerous Infectious and Parasitic Diseases and Carriers of Pathogens of these Diseases» and in accordance with Instruction No. 374 – «On Application of the List of Occupational Diseases», approved by a general order of the Ministry of Health, NAMS, Ministry of Labour of Ukraine of 29.12.2000 No. 374/68/33», the acute respiratory disease COVID-19, caused by the coronavirus SARS-CoV-2, is recognised as a particularly dangerous disease. According to these documents, according to Annex 3 to the Hygienic Classification of Labour according to indicators of harmfulness and hazard of factors of the pro-

ISSN 2223-6775, Ukrainian Journal of Occupational Health, 2022, 18 (1), 12–21

duction environment, severity and intensity of work process, approved by Order of the Ministry of Health of Ukraine No. 248 of 08.04.2014, working conditions of medical workers according to the biological hazard factor. Section V of the List of Occupational Diseases, approved by Decree of the Cabinet of Ministers of Ukraine No. 394 of 13.05.2020, was amended by Decree of the Cabinet of Ministers of Ukraine No. 2000 No. 1662, was supplemented by acute respiratory disease COVID-19, caused by SARS-CoV-2 coronavirus workers directly engaged in epidemic elimination and implementation of measures to prevent the spread of acute respiratory disease COVID-19, caused by SARS-CoV-2 coronavirus, and treatment of patients with cases of acute respiratory disease COVID-19, caused by SARS-CoV-2 coronavirus.

OM levels have fluctuated considerably over the past 10 years due to many reasons: the quality of health surveillance, the quality of medical examinations, and an imperfect registration and record-keeping system (Figure).

The number of conclusions regarding the establishment of a causal link between the victim's death and occupational disease is low [(0.70 ± 0.02) – (2.0 ± 0.60)], which is probably due to the prolonged chronic course of the disease and the low quality of medical examination and causal link examination (Table 1).

In the dynamics of observation the characteristics of OM tend to decrease, at the same time the state of working conditions of employees in certain types of economic activity often does not meet sanitary and hygienic standards and requirements. It has been determined that the number of employees in the main sectors of the economy working in such conditions is 834,4 thousand or 29.6 % of the registered number of full-time employees due to noise (17.3 %), intensity of work (13.9 %), microclimate (13.4 %), heaviness of work (12.0 %), chemical factors (11.4 %). The worst conditions are observed in the extractive industry (coal mining) – 66.5 %, processing industry (chemical, metallurgical, machine building) – 28.5 %, transport and communication industry – 27.0 % [6].

The state of OM in Ukraine has peculiarities in its levels and the distribution of victims by type of economic activity. The highest number of cases is observed in the extractive industry. Its share in the

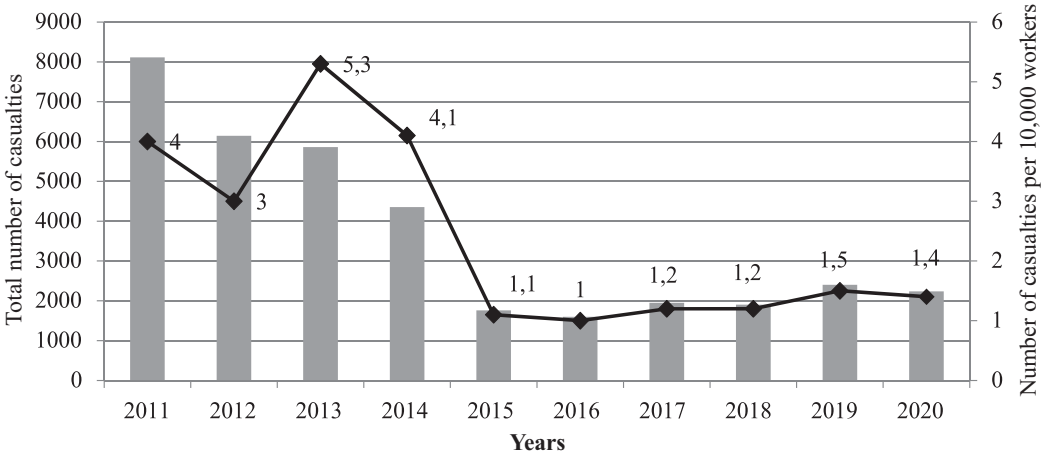

Figure. Occupational morbidity rates in Ukraine 2011–2020

ISSN 2223-6775, Ukrainian Journal of Occupational Health, 2022, 18 (1), 12–21

Table 1

Number of conclusions on the association of the victim's death with an occupational disease from 2015–2020

Year	2015	2016	2017	2018	2019	2020
Number of Occupational Diseases*	1764	1603	1951	1879	2410	2237
Number of victims' deaths caused by an occupational disease*	36	21	14	13	21	20

*Note. *Excluding occupational diseases that occurred at enterprises located in the temporarily occupied territories in accordance with the Order of the CM of Ukraine No. 1085-r of 07.11.2014.*

structure of occupational diseases is 84.5 %. Coal mining has the greatest share in the total number of occupational illnesses in Ukraine from 70.0 % to 72.0 % to 79.0 % of all cases in the extractive industry. In the general structure of occupational diseases its share has slightly decreased during the last decade in comparison with previous years, when the share of coal industry was 75–90 % of the total number. The number of occupational accidents per 10,000 workers in this area has been higher than both the national level and the level for all sectors without exception for all years. From 2011 to 2020, the number of occupational diseases in the coal industry decreased from 5,848 to 1,608 (by 27.5 %). Since 2014, there has been a gradual annual decrease in the number of cases to 1,000 cases in recent years, possibly due to military operations in the eastern regions. Iron ore mining ranks next in terms of the number of occupational diseases with 6.9–9.8 % of the total number of occupational diseases in Ukraine.

The processing industry is second in terms of occupational diseases (9.2–12.4 % of all cases in the country). Metallurgy production (2.7–3.1 %) and machinery and equipment production (2.9–6.7 % of the total number of occupational diseases in the country) are significant contributors to the majority of occupational diseases in this industry. There are low rates of OM in construction (in recent years there has been a decrease from 247.0 to 30.0 cases), agriculture, health care, where its level is several times lower than in the country as a whole. The detection of occupational diseases is particularly disastrous in agriculture, with a steady decline in annual first-time cases from 50 in 2011 to 8 in 2020 and representing 0.3–0.6 % of the national total (Table 2).

The distribution of occupational diseases by main forms of pathology is shown in Table 3. Respiratory diseases caused by exposure to dust account for the greatest number of occupational diseases. This group of diseases is formed by pneumoconiosis, chronic obstructive pulmonary disease (COPD) and chronic bronchitis, which account for 40–80% of occupational diseases annually registered in the country (4041.0 in 2011, 2237.0 in 2020). The number of cases of pneumoconiosis in 2011 was 1,814 and 147 in 2020 and chronic bronchitis was 1,528 and 263 respectively.

In 2020, the number of cases of pneumoconiosis and chronic bronchitis is significantly lower, but the diagnosis of COPD, which most often combines two diseases – chronic bronchitis and emphysema – is added. The diagnosis of COPD accounts for 1,734 and 634 cases, respectively, in the years indicated. There were no COPD diagnoses in the registration system (AIS Prof. Morbidity), the most frequent pathology belonging to the group «chronic bronchitis»,

Table 2

Dynamics of occupational morbidity in Ukraine by main industries according to SACE (2011-2020)

Year / Branch	2011		2012		2014		2015		2017		2019		2020	
	Number of cases	Specific weight, %	Number of cases	Specific weight, %	Number of cases	Specific weight, %	Number of cases	Specific weight, %	Number of cases	Specific weight, %	Number of cases	Specific weight, %	Number of cases	Specific weight, %
Industry, including:	7623	94.0	5968	97.0	4180	96.0	1639	93.1	1810	95.8	2334	97.1	2141	95.7
Extractive industry, including:	6857	84.5	4948	80.5	3633	83.5	1365	77.5	1612	82.6	2030	84.5	1914	85.5
– the production of hard coal (coal mining),	5848	72.1	4861	79.0	3278	75.3	1006	57.1	1367	70.1	1608	66.9	1575	70.4
– iron ore mining,	560	6.9	500	8.1	215	4.9	238	13.5	160	8.2	221	9.2	177	7.9
– uranium and thorium ore mining;	91	1.1	66	1.1	83	1.9	82	4.7	74	3.8	188	7.8	139	6.2
The manufacturing industry, including:	748	9.2	510	8.3	538	12.4	269	15.3	255	13.1	299	12.4	227	10.1
– metallurgical production,	223	2.7	119	1.9	65	1.5	97	5.5	57	2.9	75	3.1	104	4.6
– machinery and equipment manufacturing (mechanical engineering).	237	2.9	321	5.2	328	7.5	137	7.8	143	7.3	161	6.7	66	3.0
Production and distribution of electricity, gas and water	18	0.2	10	0.2	9	0.2	5	0.3	3	0.1	5	0.2	2	0.1
Agriculture	50	0.6	34	0.6	7	0.2	7	0.4	9	0.5	8	0.3	2	0.1
Construction	247	3.0	–	–	131	3.0	27	1.5	17	0.9	30	1.2	24	1.1
Transport and communications	22	0.3	19	0.3	9	0.2	3	0.2	9	0.5	2	0.1	3	0.1
Health and social care	119	1.5	71	1.2	34	0.8	36	2.0	30	1.5	16	0.7	14	0.6
Other	51	0.6	53	0.9	11	0.2	49	2.8	16	0.8	13	0.6	53	2.4
Total in Ukraine	8112	100.0	6145	100.0	4352	100.0	1761	100.0	1951	100.0	2403	100.0	2237	100.0

ISSN 2223-6775, Ukrainian Journal of Occupational Health, 2022, 18 (1), 12–21

Table 3

Distribution of occupational diseases by diagnosis among workers in Ukraine in 2011–2020 (absolute number and percentage in the structure of occupational diseases)

Branch / Year	2011		2012		2014		2015		2016		2017		2019		2020	
	Number of cases	Specific weight, %	Number of cases	Specific weight, %	Number of cases	Specific weight, %	Number of cases	Specific weight, %	Number of cases	Specific weight, %	Number of cases	Specific weight, %	Number of cases	Specific weight, %	Number of cases	Specific weight, %
In total in Ukraine, including:	**8112**	**100.0**	**6145**	**100.0**	**4352**	**100.0**	**1761**	**100.0**	**1599**	**100.0**	**1951**	**100.0**	**2403**	**100.0**	**2237**	**100.0**
Pneumoconiosis	1814	22.4	1573	25.6	942	21.6	198	11.2	148	10.3	190	10.7	177	7.4	147	6.6
Chronic bronchitis	1528	18.8	1531	24.9	467	10.7	244	13.9	227	14.2	313	9.7	438	18.2	263	11.7
Vibration disease	240	3.0	279	4.5	210	4.8	134	7.6	143	9.0	176	9.0	271	8.8	155	7.0
Sensorineural deafness	177	2.2	161	2.6	113	2.6	71	4.0	60	3.8	76	3.9	230	9.6	122	5.4
Diseases of the musculoskeletal system	1457	18.0	1323	21.5	757	17.4	601	34.1	640	40	710	36.4	774	32.2	758	33.9
Diseases of chemical etiology	203	2.5	153	2.5	140	3.2	93	5.3	56	3.5	40	2.1	83	3.5	97	4.3
Other occupational diseases	2692	33.2	1125	18.3	1723	39.7	420	23.8	325	20.3	446	22.8	430	17.9	695	31.1

and there were also single cases of emphysema in the system.

Musculoskeletal disorders are next in the overall structure of OMs – 18–33 % of cases. In absolute numbers, it ranges from 1,457 to 758 cases annually. In the last 3 years it has become possible to differentiate this type of pathology in Ukraine into those caused by lesions of the musculoskeletal system and connective tissue and those caused by lesions of nervous system. The majority of diseases of the musculoskeletal system of the occupational genesis are formed mainly by lesions of the peripheral nervous system (81–87 % of the whole group) – heterosensory polyneuropathy and various radiculopathies. A smaller proportion, including diseases of the musculoskeletal system (17.0 % to 7.0 %), include arthritis, periarthritis, epicondylitis, spondylosis, aseptic necrosis, etc.

Hygienic imperfections of equipment, machines and mechanisms generating elevated noise and vibration levels continue to cause the formation of vibration and noise pathology in workers. They include vibration disease and sensorineural hearing loss, which in the years under study accounted for 3–8 % and 2–6 %, respectively, of all occupational pathologies in the country as a whole. More often vibration and noise pathology are observed in workers in the coal industry.

The vibration sickness takes the third place in sickness rate structure, it includes from 210 to 515 cases per year in the studied years with the pronounced tendency to decrease. The number of annual cases of sensorineural hearing loss for 2011–2020 is between 134 and 411, with a decreasing trend. It should be noted that most cases of both vibration and noise pathology are detected in persons who are exposed to local

ISSN 2223-6775, Ukrainian Journal of Occupational Health, 2022, 18 (1), 12–21

vibration and noise simultaneously, working with the use of various types of pneumatic tools (perforators, drills, stump hammers, etc.).

Sensorineural hearing loss has been occurring over the period in the number of 60–245 cases, with a decreasing trend in recent years.

The share of diseases of chemical etiology in the total structure of occupational morbidity was 0.9–5.7 % during the mentioned period. The absolute number was 98–334 cases in different years. This group includes such diseases as contact dermatitis, toxic encephalopathy, chronic respiratory conditions caused by chemicals, gases, fumes and vapours, bronchial asthma, fluorosis, malignant neoplasms, blood and blood forming organ disorders. All these diseases are registered in small numbers, but most of them are characterised by a long and severe course and loss of work ability. Such dynamics of occupational diseases caused by chemical factors, while adverse working conditions persist, is primarily due to insufficient coverage of medical examinations and their low quality, as well as insufficient training of doctors in chemical occupational pathology.

In the structure of occupational diseases in 2020, as in previous years, the first place belongs to respiratory diseases – 39.6 % of the total number of diagnoses in Ukraine (2,160 cases). Second place is occupied by locomotor system diseases (radiculopathies, osteochondrosis, arthritis, arthrosis) with 27.5 % (1,502 cases). Third place went to hearing disorders – 24.8 % (1,354 cases), and fourth place to vibration disorders – 5.0 % (270 cases). A comparative analysis of OM levels for 2018–2020 shows that the COVID-19 pandemic has changed the ratio of rates downwards or has stabilised (Table 4).

In 2020 compared to 2019, the number of OM reports decreased by 6.8 %. This decrease was

Table 4

Dynamics of change in the number of patients with occupational pathology diagnosed for the first time in their lives in 2018–2020

Number of cases in 2018	The dynamics of increase in the number of patients until 2020 (visibility index, %)		
	increase (> 100,0 %)	insignificant increase in the number of cases (from 99.0 to 0.1 %)	decrease or stabilization, number of cases < 0 %
Extra high and high (> 120.0 people per year): Dnipro region (811.0), Lviv region (347.0), Donetsk region (316.0)		Dnipro region (102.0), Lviv region (33.0), Donetsk region (147.0)	–
Average (50.0–120.0 people per year): Kirovohrad region (77.0), Volyn region (69.0), Luhansk region (68.0)		Kirovohrad region (72.0) Luhansk (16.0)	Volyn region (-8.0) Poltava region (2.0) The city of Kyiv (-6.0) Kyiv region (-1.0) Cherkasy region (-3.0) Vinnytsia region (-3.0) Zhytomyr region (-7.0) Kharkiv region (-20.0) Sumy region (-28.0)
Low (< 50.0 people per year)		Zaporizhzhia region (76.0)	Mykolaiv (-8.0) Ivano-Frankivsk (1.0) Poltava region (2.0) Rivne region (-2.0)

ISSN 2223-6775, Ukrainian Journal of Occupational Health, 2022, 18 (1), 12–21

observed in Lviv region by 20 %, Dnipropetrovsk region by 7.1 %, Sumy region by 26.0 %, Kirovograd region by 17.2 % and Volyn region by 30.7 %. The decrease or stabilization of OM rates for 2020, in our opinion, is related to the COVID-19 pandemic, among other reasons. Cases of acute occupational disease diagnosed with COVID-19, for which acts on form H1/P are drawn up, are 3,054 in 2020 (of which 63 are fatal), which has led to less attention by health workers and society to detection of occupational disease in workers, except in the health sector. Acute occupational diseases diagnosed with COVID-19 have been reported with some fluctuations in all regions of Ukraine. The highest number of cases was registered in Kyiv region (13.1 %), the city of Kyiv (9.4 %), Kharkiv region (8.6 %), Lviv and Khmelnitskyi regions (7.2 %) and Ivano-Frankivsk region (6.9 %). The number of cases of acute occupational disease diagnosed with COVID-19 in these regions constitutes 52.4 % of the total number of persons affected in Ukraine.

Causes of acute occupational diseases diagnosed with COVID-19 are: other causes – 46.3 % (1,414) cases; organizational causes (failure to comply with occupational safety instructions, failure to provide personal protective equipment, failure to use personal protective equipment when available) – 33.7 % (1030) cases, psychophysiological causes – 14.1 % (429) cases, technical causes (non-compliance of means) of collective and individual protection with established requirements and their insufficiency) – 4.5 % (138) cases, technogenic, natural, environmental and social causes – 1.4 % (43) cases. The total number of diagnosed occupational diseases in Ukraine for 2020 is 5453.

Conclusions

1. The number of workers in the main branches of economy in conditions that do not meet sanitary and hygienic standards and requirements has been determined to be 29.6 % of the recorded number of full-time employees. The worst conditions are observed in extractive industry (coal mining) – 66.5 %, processing industry (chemistry, metallurgy, machine building) – 28.5 %, transport and communication – 27.0 %.
2. A steady decrease in the number of registered cases and a decline in the incidence of OM in the dynamics 2011–2020 have been established. The first place belongs to dust etiology diseases (40–83 %), the second – to musculoskeletal system diseases (about 21.2–40.0 %), the third – to vibration disease (3.0–9.0 %), the fourth – to sensorineural deafness (2.6–6.0 %) and occupational pathology of chemical genesis (2.4–3.6 %). The most dangerous regions for the formation of occupational pathology remain those where large enterprises of the leading industries are located (coal mining, metallurgy, machine building) and where a significant number of workers in harmful conditions are concentrated (Donetsk, Lugansk, Dnipro, Lviv regions, etc.).
3. During 2011–2020 a decrease in the number of newly registered occupational diseases has been observed, from 8,112 to 2,237 (more than 3.5 times). This is due to the fact that large industrial regions are located in the ATO zone (OOS), from where today it is impossible to obtain verified information about OM of workers; the legislation on the functioning of occupational safety and health services, moni-

ISSN 2223-6775, Ukrainian Journal of Occupational Health, 2022, 18 (1), 12–21

toring of working conditions and health indicators have changed. There are difficulties in carrying out preventive medical examinations, drawing up sanitary and hygienic characteristics of working conditions, imperfect system of collection and registration of OM cases, especially in 2020 period of COVID-19 pandemic.

4. A comparative analysis of OM levels for 2018–2020 indicates that the COVID-19 pandemic has changed its ratio towards decreasing or stabilizing, which depends on the reduced attention of health workers and society to detect OM in workers in different industries, except the health care industry.
5. The main circumstances that led to occupational diseases in 2020 were: imperfect technological process, 33.1 %; inadequate and insufficient collective and personal protective equipment; non-use of personal protective equipment, 10.8 %; and imperfect machinery and working tools, 10.0 % of the total.
6. A scientifically grounded solution to the problem of deficiencies in the system of collection, registration and analysis of data on cases of occupational pathologies is the creation of the State Register of Persons Diagnosed with Occupational Diseases, based on the latest information technology.

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Information about sources of financing of the research: the research was carried out on the topic: «Epidemiological research of occupational morbidity and industrial injuries, development of ways of their prevention in working population on the basis of modern information technologies in conditions of reformation of medical sector», state registration number 0120U101908.

Received: January 17, 2022
Accepted for publication: March 24, 2022

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